











THE IMPERIAL ENCYCLOPEDIA AND DICTIONARY

A LIBRARY OF UNIVERSAL KNOWLEDGE AND AN UN-ABRIDGED DICTIONARY OF THE ENGLISH LANGUAGE UNDER ONE ALPHABET

IN FORTY VOLUMES

VOLUME 22 LEGATE—MACKENZIE



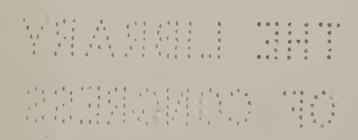
AE5

THE LIBITARY OF CONTINESS,
Two Copier Righted
DEC 7 1903
CONDIGHT ENTEY
ALC. 5 9 03
CLASS & XXC NO.
7 4 0 19
COPY B.

Copyright, 1890, 1895, 1897, 1903,

BY

GARRETSON COX & COMPANY.

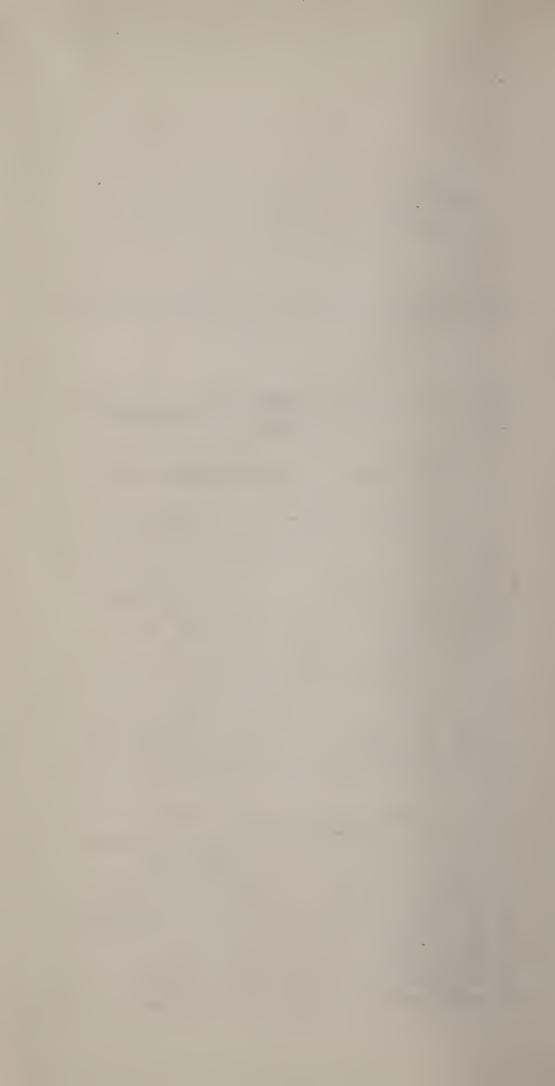


SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into sylables; ('), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-sym-
bols emble Representing the Sounds as ployed in exemplified in the Words. Respelling. Words respelt with Sound-symbols and Marks for Pronunciation.
$ar{a}$ mate, fate, fail, aye $m\tilde{a}t$, $f\bar{a}t$, $f\bar{a}l$, $ar{a}$ mat, fat $m\tilde{a}t$, $f\tilde{a}t$.
\hat{a} far, calm, fatherfâr, kâm, fâ' ther.
äcare, fair
e mete, meat, feet, free $m\bar{e}t$, $m\bar{e}t$, $f\bar{e}t$, $fr\bar{e}$.
 emet, bedmět, běd. eher, stir, heard, curher, ster, herd, ker.
\bar{i} pine, ply, height $p\bar{i}n$, $pl\bar{i}$, $h\bar{i}t$.
\check{a} pin, nymph, ability $p\check{i}n$, $n\check{i}mf$, \check{a} - $b\check{i}l'\check{i}$ - $t\check{i}$ \check{o} note, toll, soul $n\check{o}t$, $t\bar{o}l$, $s\bar{o}l$.
\check{o} not, plot $n\check{o}t$, $pl\check{o}t$. \hat{o} move, smooth $m\hat{o}v$, $sm\hat{o}t\hbar$.
\ddot{o} Goethe (similar to e in her) $g\ddot{o}$ ' $t\ddot{e}h$.
ownoun, bough, cownown, bow, kow. oyboy, boilboy, boyl.
\tilde{u} pure, dew, few $p\bar{u}r$, $d\tilde{u}$, $f\bar{u}$.
$ \mathring{u}$ bud, come, tough $b\mathring{u}d$, $k\mathring{u}m$, $t\mathring{u}f$. $ \mathring{u}$ full, push, good $f\mathring{u}l$, $p\mathring{u}sh$, $g\mathring{u}d$.
üFrench plume, Scotch guidplüm, güd.
chchair, matchchär, măch.
ihGerman buch, Heidelberg, Scotch loch (guttural)bôċh, hī'del-bĕrċh, lŏċh.
g game, go, gun $g\bar{a}m$, $g\bar{o}$, $g\check{u}n$.
jjudge, gem, gin j ŭ j , j ĕ m , j ĭ n . k king, cat, cot, cut k ĭ n g, kăt, kŏt, kŭt.
ssit, scene, cell, city, cypress. sit, /:ēn, sēl, sit'i, sī'prēs.
shshun, ambitionshun, am-bish'un, ththing, breaththing, breth.
ththough, breathethō, brēth. zzeal, maze, musezēl, māz, mūz.
zhazure, vision



ABBREVIATIONS USED IN THIS WORK.

a., or adjadjective	A.u.cin the year of the
A.BBachelor of Arts	building of the city
abbrabbreviation, abbre-	(Rome)[Annourbis
viated	conditæ]
abl. or abla. ablative	
	AugAugust
AbpArchbishop	augaugmentative
abtabout	AustAustrian
AcadAcademy	A. Vauthorized version
acc. or acaccusative	[of Bible, 1611]
accomaccommodated, ac-	avoiravoirdupois
commodation	BBoron
actactive	BBritannic
	bborn
A.Din the year of our	
Lord [Anno Dom-	BaBarium
[ini]	BartBaronet
AdjtAdjutant	BavBavarian -
AdmAdmiral	bl.; bblbarrel; barrels
adv. or adadverb	B.Cbefore Christ
A. FAnglo-French	B.C.LBachelor of Civil
AgSilver [Argentum]	Law
agriagriculture	B.DBachelor of Divinity
A I Angle Letin	
A. LAnglo-Latin	cefbefore
AlAluminium	BelgBelgic
AlaAlabama	BengBengali
AlbAlbanian	BiBismuth
algalgebra	blog biography, biograph-
A.Mbefore noon [ante	ical
meridiem	biolbiology
A.M Master of Arts	B.LBachelor of Laws
AmAmos	BohemBohemian
Amer America, -n	botbotany, botanical
anatanatomy, anatomical	BpBishop
anatomy, anatomean	BrBromine
ancancient, anciently	
An. M in the year of the	BrazBrazilian
world [Anno Mundi	BretBreton
anonanonymous	BrigBrigadier
antiqantiquity, antiqui-	BritBritish, Britannica
ties	brobrother
aoraorist, -ic	BulgBulgarian
appappendix	bushbushel, bushels
apparapparently	CCarbon
AprApril	ccentury
ArArabic	CaCalcium
archarchitecture	CalCalifornia
archæolarchmology	CambCambridge
anith anithmetic	CanCanada
aritharithmetic	
ArizArizona	CantCanterbury
ArkArkansas	capcapital
artarticle	CaptCaptain
artil artillery	CardCardinal
ASAnglo-Saxon	carpcarpentry
As/	CathCatholic
AssocAssociation	causcausativc
asstassistant	cavcavalry
natual actual our	CdCadmium
astrolastrology	CeCerium
astronastronomy	
attribattributive	CeltCeltic
attyattorney	centcentral
at. wtatomic weight	cfcompare [confer]
AuGold [Aurum]	ch or chhchurch

· ·	
ChalChaldea	diff different, difference
chapchapter	dim diminutive
chemchemistry, chemical	distdistrict
ChinChinese	distribdistributive
ChronChronicles	divdivision
ohron almonology	dozdozen
chronchronology	
ClChlorine	DrDoctor
Classical [= Greek	drdram, drams
and Latin]	dramdramatic
CoCobalt	Dut. or DDutch
CoCompany	dwtpennyweight
cocounty	dynam or
cogcognate [with]	dyndynamics
ColColonel	EErbium
Col Colossians	E. or eEast, -ern, -ward
Coll Collogo	
CollCollege	E. or Eng. English
colloqcolloquial	EcclEcclesiastes
ColoColorado	eccl. or jecclesiastical [af-
ComCommodore	eccles) fairs]
comcommerce, commer-	ededited, edition, edi-
cial	tor
comcommon	e.gfor example [cx
compcompare	gratia]
compcomposition, com-	E. Ind. or East Indies, East
pound	E. I Indian
comparcomparative	electelectricity
conchconchology	EmpEmperor
congcongress	EncycEncyclopedia
ConglCongregational	Eng. or E English
conjconjunction	enginengineering
Conn or Ct.Connecticut	entomentomology
contrcontraction, con-	env. extenvoy extraordinary
tracted	epepistie
CopCoptic	EphEphesians
CorCorinthians	EpiseEpi-copal
CornCornish	eq. or = equal, equals
corrcorresponding	equivequivalent
CrChromium	
	espespecially
crystalcrystallography CsCæsium	Est Esther
ot	estabestablished
ctcent	EsthonEsthonian
Ct.or Conn.Connecticut	etcand others like [et
CuCopper [Cuprum]	cctera]
cwta hundred weight	Eth Ethiopie
CycCyclopedia	ethnogethnography
DDidymium	ethnolethnology
D. or DutDutch	et seqand the following
ddied	[et sequentia]
d. [l. s. d.]penny, pence	etymetymology
DanDaniel	Eur European
DanDanish	ExExodus
datdative	exclamexclamation
daudaughter	EzekEzekie
D. CDistrict of Columbia	
Doctor of Civil for	EzrEzra
D.C.LDoctor of Civil [or	FFluorine
Common Law	F. or Fahr. Fahrenheit
p.DDoctor of Divinity	f. or femfeminine
DecDecember	F. or FrFrench
decdeclension	fafather
defdefinite, definition	Fahr. or F. Fahrenheit
degdegree, degrees	farfarriery
DelDelaware	FeIron [Ferrum]
deldelegate, delegates	FebFebruary
demdemocratic	fem or ffeminine
depdeputy	
depdeponent	figfigure, figuratively
	FinFinnish
deptdepartment	F.—L French from Latin
derivderivation, deriva-	FlaFlorida
Don't Don't area	FlemFlemish
DeutDeuteronomy	forforeign
dialdialect, dialectal	fort fortification
diamdiameter	
	Fr. or FFrench
DicDictionary	fr. or FFrench frfrom

troyfrequentat	ive	indindicative
FrisFrisian		indefindefinite
ftfoot, feet		Indo-EurIndo-European
futfuture G. or GerGerman		infinfantry
GGlucinium		inf or infin.infinitive instrument, -al
GaGallium		intinterest
GaGeorgia GaelGaelic	į	intensintensive
Gael Gaelic		interj. or
GalGalatians		intinterjection
galgallon galvgalvanism,	galvanio	interroginterrogative pro- noun
gardgardening	Earvanic	intr. or
gengender		intransintransitive
GenGeneral		IoIowa
GenGenesis		Ir Iridium
gen genitive GenoGenoeso		IrIrish IranIranian
geoggeography		irrirregular, -ly
geolgeology		IsIsaiah
geomgeometry		ItItalian
German, G	ermany	JanJanuary
GothGothic GovGovernor	ł	JapJapanese JasJames
govtgovernmen	t.	JerJeremiah
GrGrand, Gre		JnJohn
GrGreek		JoshJoshua
grgrain, grai	ns	JrJunior
gramgrammar		JudgJudges
Gr. BritGreat Brits GrisGrisons	ri ii	KPetassium [Kalium] KKings [in Bible]
gungunnery	ĺ	Kking
HIlegira		KanKansas
HHydrogen		KtKnight
hhour, hour	S	KyKentucky
HabHabakkuk HagHaggai_		LLatin LLithium
H. B. M His for He	r] Britan-	1. [l. s. d.], pound, pounds
nic Majes HebHebrew, H	sty	1. [l. s. d.], { pound, pounds or £} [sterling] LaLanthanium
HebHebrew, H	ebrews	LaLanmanum LaLouisiana
herheraldry herpetherpetolog	V	LamLamentations
HgMercury	[Hydrar-	LangLanguedoc
gyrum		langlanguage
hhd hogshead.	hogsheads	LapLapland latlatitude
HindHindustan	i, Hinau,	
or Hindi histhistory, hi	storical	lb.; llb. or pound; pounds lbs [weight]
HonHonorable	00011001	LetLettish
horthorticultur	re e	LevLeviticus
HosHosea		LGLow German
HungHungarian	000	L.H.DDoctor of Polite Literature
HydrosHydrostat IIodine	ics	LieutLieutenant
I.; IsIsland; Is	lands	LimLimousin
IcelIcelandic		LinLinnæus, Linnæan
ichthichthyolog	3 y	litliteral,-ly
IdaIdaho	anti	litliterature LithLithuanian
i.e	est	lithoglithograph, -y
illusillustratio	n.	LLLate Latin, Low
impera or		Latin
imprimperativ	e	LL.DDoctor of Laws
impersimpersona		longlongitude LuthLutheran
impfor imp imperfect		MMiddle
impf. p. or imperfect	participle	MMonsieur
Impropimproperl	ý	mmile, miles
InIndium		m. a. mascmasculine
in inch, inch	es	M.AMaster of Arts MaccMaccabees
inceptinceptive		machmachinery
IndIndia, Ind IndIndiana	LOULA	Mag Magazine
Section 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		*

MajMajor	N. A., or
MalMalachi	N. Amer. North America, -n
MalMalay, Malayan	natnatural
manufmanufacturing,	nautnautical
manufacturers	navnavigation, naval af
MarMarch	fairs
masc or m.masculine	NbNiobium N. C. or
MassMassachusetts mathniathematics, math-	N. CarNorth Carolina
	N. DNorth Dakota
ematical MattMatthew	NebNebraska
M.D Doctor of Medicine	negnegative
MDMiddle Dutch	NehNehemiah
MdMaryland	N. EngNew England
MEMiddle English, or	neut or nneuter
Old English MeMaine	NevNevada
MeMaine	N.GrNew Greek, Modern
mechmechanics, mechani-	Greek
medmedicine, medical	N. HNew Hampshire NHGNew High German
memmember	[German]
mensurmensuration	[German] Ni Nickel
Messrs. or	N.JNew Jersey
MMGentlemen, Sirs	NLNew Latin, Modern
metalmetallurgy	Latin
metaphmetaphysics, meta-	N. MexNew Mexico
physical	N. T or
meteormeteorology	N. TestNew Testament
MethMethodist	N. Y New York [State]
MexMexican	nomnominative
MgMagnesium	Norm. F Norman French
M.GrMiddle Greek	North, ENorthern English
MHG Middle High Ger-	NorwNorwegian, Norse
man MicMicah	NovNovember NumNumbers
Mich Michigan	numisnumismatics
MichMichigan midmiddle [voice]	OOhio
MilanMilanese	OOld
mid. L. or Middle Latin, Me-	OOxygen
ML diæval Latin	ObadObadiah
milit. or	objobjective
milmilitary [affairs]	obs. or †obsolete
minminute, minutes	obsolesobsolescent
mineralmineralogy	O.BulgOld Bulgarian or Old
MinnMinnesota	Slavic
Min. Plen. Minister Plenipoten-	OctOctober
tiary	Odontogodontography
MissMississippi	OEOld English
ML. or Middle Latin, Me-	OF or
mid. L) diæval Latin MLGMiddle Low German.	O. FrOld French OHGOld High German
MileMademoiselle	OntOntario
MmeMadam	optoptics, optical
MnManganese	OrOregon
MoMissouri	ordorder
MoMolybdenum	ordordnance
modmodern	orgorganic
MontMontana	origoriginal, -ly
MrMaster [Mister]	ornithornithology
MrsMistress [Missis]	OsOsmium
MS.; MSSmanuscript; manu-	OS Old Saxon O. T., or
scripts	O. T., Or
MtMount, mountain	O. TestOld Testament
musmusic	OxfOxford
mus. Doc Doctor of Music	ozounce, ounces Phosphorus
mythmythology, mythological	PPhosphorus
NNitrogen	p.; pppage; pages p., or partparticiple
N. or nNorth, -ern, -ward	Pa. or Penn. Pennsylvania
nnoun	paintpainting
n or neutneuter	palæonpalæontology
NaSodium [Natrium]	parlparliament
NahNahum	passpassive
*	¥

pathol or	ptpast tense
pathpathology	ptpint
PbLead [Plumbum] PdPalladium	PtPlatinum pubpublisher,
Penn or Pa. Pennsylvania	publication
perfperfect	publication pwtpennyweight
perhperhaps PersPersian, Persic	QQuebec qtquart
persperson	qtrquarter [weight]
perspperspective	ququery
pertpertaining [to] PetPeter	$\left egin{array}{ll} ext{q.vwhich} & ext{see} & \left[ext{quod} ight] \ ext{vide} ight] \end{array} ight.$
Pg. or Port. Portuguese	RRhodium
pharpharmacy	RRiver
PH.DDoctor of Philoso- phy	RbRubidium R. CathRoman Catholic
PhenPhenician	rec. secrecording secretary
PhilPhilippians	RefReformed
PhilemPhilemon philolphilology, philologi-	reflreflex regregular, -ly
001	regtregiment
philos. { philosophy, philo- or phil } sophical	rel. pro. or
phonogphonography	relrelative pronoun reprrepresenting
photogphotography	repubrepublican
phrenplirenology	RevRevelation
physiolphysics, physical physiolphysiology, physi-	RevThe Reverend Rev. VRevised Version
ological	rhetrhetoric, -al
PiedPiedmontese	R. IRhode Island
PlPlate pl. or pluplural	R. NRoyal Navy RomRoman, Romans
Pl. D Platt Deutsch	RomRomanic or Ro-
plupfpluperfect	niance
P.Māfternoon[post meri- diem]	Rom. Cath. Roman Catholic
pneumpneumatics	Rom. Cath. Roman Catholic Ch. or R. Church
P. OPost-office	r.rranroad
poetpoetical PolPolish	Rt. RevRight Reverend RuRuthenium
pol. econpolitical economy	RussRussian
politpolitics, political	r.wrailwa y
pop population Port. or Pg. Portuguese	SSaxon SSulphur
posspossessive	ssecond, seconds
pppages	s. [l. s. d.]shilling, shillings
pppast participle, per-	S. or sSouth, -ern, -ward S. A. or
p. prpresent participle	S. Amer. South America, -n
Pr. or Prov. Provençal	SamSamaritan
prefprefix	SamSamuel Sans, or
preppreposition PresPresident	SkrSanskrit
prespresent	SbAntimony [Stibium]
PresbPresbyterian	s.cunderstand, supply, namely [scilicet]
primprimitive	S. C. or
privprivative	S. CarSouth Carolina
probprobably, probable ProfProfessor	ScandScandinavian ScotScotland, Scotch
pronpronoun	scrscruple, scruples
pronpronunciation, pro-	ScripScripture [s], Scrip-
nounced	tural sculpture
propproperly prosprosody	sculpsculpture S.DSouth Dakota
ProtProtestant	SeSelenium
Prov.or Pr. Provengal	secsecretary
ProvProverbs provprovince, provincial	secsection SemSemitic
Prov. Eng. Provincial English	SepSeptember
PrusPrussia, -n	ServServian
PsPsalm, Psalms psycholpsychology	ShaksShakespeare SiSilicon
Pol omorbol omoro81	

a.D.D.Ruk V	IATIUNS.
ŚicSicilian	trigontrigonometry
oing cingular	TurkTurkish
singsingular	
sissister	typogtypography, typo-
Skr. or	graphical
SansSanskirt	UUranium
SlavSlavonic, Slavic	ultultimate, -ly
SnTin [Stannum]	UnitUnitarian
SocSociety	UnivUniversalist
Song SolSong of Solomon	UnivUniversity
SpSpanish	U. PresbUnited Presbyterian
sp. grspecific gravity	U.SUnited States
sqsquare	U. S. A United States Army
SrSenior	U. S. N United States Navy
SrStrontium	UtUtah
St.: SteSaint	VVanadium
	vvanadium vverb
Ststreet	VVelu
statstatute	VaVirginia
s.T.DDoctor of Sacred	varvariant [word]
Theology	var variety of [species]
subjsubjunctive	VenVenerable
sufsuffix	VenetVenetian
Su. GothSuo-Gothic	vet veterinary
superlsuperlative	v. i. or
SuppSupplement	v. intrverb intransitive
SuptSuperintendent	vilvillage
surgsurgery, surgical	viznamely, to-wit [vide-
Survsurveying	licet
SwSwedish	v. nverb neuter
SwabSwabian	vocvocative
symsymbol	volvolume
synsynonym, -y	volsvolunteers
SyrSyriac, Syrian	VtVermont
ttown	v. tr verb transitive
TaTantalum	W Tungeton [Wolfnam]
Tout Touton	WTungsten [Wolfram]
TartTartar	WWelsh
TeTellurium	W. or wWest, -ern, -ward
technol technology	WalWalachian
telegtelegraphy TennTennessee	WallWalloon
TennTennessee	WashWashington
termtermination	WestphWestphalia, -n
terrterritory	W. Ind. West Indies, West or W. I Indian
TeutTeutonic	or W. I Indian
TexTexas	WisWisconsin
ThThorium	wtweight
theattheatrical	W. VaWest Virginia
theoltheology, theological	WyoWyoming
theraptherapeutics	Y Yttrium
ThessThessalonians	ydyard
TiTitanium	yryear
TimTimothy	ZechZechariah
TitTitus	ZephZephaniah
TlThallium	ZnZinc
toxicoltoxicology	zoolzoology, zoological
tptownship	ZrZirconium
tr. or trans.transitive	S
transltranslation, trans-	
lated.	
lateu.	

See also ABBREVIATIONS: in Vol. I.

IMPERIAL ENCYCLOPEDIA AND DICTIONARY.

LEGATE, n. leg'āt [OF. legat, a legate—from L. legātus, sent, in mid. L. a legate: It. legato; Sp. legado, a legate, a legacy]: an ambassador or envoy, particularly of the pope. Leg'ateship, n. the office of a legate. Legatine. a. leg'ă-tīn, relating to a legate. Legation, n. le-gā'shŭn [F.—L.]: person or persons sent as ambassadors or envoys; an embassy: also all that officially pertains to a national ambassador or envoy, e.g., his secretaries, attachés, household, and residence. Leg'atine Constitutions, in chh. hist., ecclesiastical laws enacted in national synods held under Cardinals Otho and Othobon, legates from Pope Gregory IX. and Pope Clement IV., in the reign of Henry III., about 1230 and 68

LEG'ATE, Pontifical: ambassador or representative, whether temporary or permanent, sent by the pope to represent him or the Roman Church at the seat of a particular bishopric or at the seat of a national government. In the ancient church were many officials, called in Greek apocrisiarioi, in Latin responsales, at the court of Constantinople; but their commission was commonly temporary, and for some special object. In the later constitution of the church, three classes of legates are distinguished: 1. Legati a latere, 'legates dispatched from the side' of the pontiff, who are commonly cardinals; 2. Legati missi, called also 'apostolic nuncios, and including a lower grade called 'internuncios;' 3. Legati nati, 'legates born,' whose office is not personal, but is attached by ancient institution or usage to the see or other ecclesiastical dignity which they hold: this institution has gone into abeyance. Indeed, the authority of legates is much modified in the modern church. In the mediæval times, the legate claimed full papal jurisdiction in the country assigned to him, even overruling the local jurisdiction of the bishops of the national church. This led to many disputes, and the Council of Trent removed the ground of contention by abolishing all such claims to local jurisdiction as trenched upon the authority of the bishops. The legate, in the modern church, is little other than the ambassador, mainly for spiritual purposes, of the pope. He is held as belonging to the diplomatic body, and by the usage of Rom. Cath.

LEGATEE-LEGEND.

courts takes precedence of all other ambassadors. The legates at the second-rate courts have the title internuncio. Legates are commonly bishops or arehbishops, in partibus infidelium. The establishment of a nunciature at Munich 1785 led to an animated controversy. In the pope's own states, as they existed before the late revolution, the governors of the legations (see ITALY: PAPAL STATES) were called legates.

LEGATEE, n. lĕg'ă-tē' [see Legacy]: one to whom a legacy is left.

LEGATO, ad. lĕ-gā'tō [It. legato, united—from L. lĕgārĕ, to bind]: term in music, meaning, 'in a smooth or gliding manner, denoting that the notes are to be played as if bound or tied together, or in such a manner that the one note is rounded off, or flows into the following one. Many musicians think that L. passages should be played slower, which is a mistake. Wherever Legato is marked, either as the character of the whole piece, or over a part of the notes, it is the sign that the music requires to be performed in a flowing manner, and without interruption between the striking of the notes.

LEGA'TUM REI ALIE'NÆ, in the Roman Law: legacy of a thing which does not belong to the testator. In England and Ireland, such a legacy is simply null and void; but in Scotland, the Roman law has been adopted, by which, if the testator knew the thing bequeathed was not his own, the executor is bound to purchase something else, as compensation to the legatee.

LEGEND, n. lěj'ěnd [F. légende; It. leggenda, a legend —from L. legendus, to be gathered or read: mid. L. legenda, things to be read, a book containing the acts of the saints—from lego, I gather or read]: a story or narrative of a romantie or incredible kind; the words inseribed round the edge of a medal or coin, or on a stone or building. Leg'endary, a. -der-i, fabulous; romantic; consisting of legends: N. a book of legends; a relater of legends.—Legends in early times, in the Rom. Cath. Church, denoted a book containing the daily Scripture lessons which were wont to be read as a part of divine Then the narratives of the lives of saints and martyrs, as well as the collections of such narratives. received this name, because the monks read from them at matins, and after dinner in the refectories. Such legends also were inserted in the breviaries (see Brev-IARY), that they might be read on the festivals of the saints and martyrs. Among mediæval collections of legends, that by the Genoese archbishop, Jacobus de Voragine, in the second half of the 13th c., under the title Legenda Aurea (the Golden Legends), or Historia Lombardica, is most celebrated. But the most comprehensive and valuable work on the subject is that commenced by the Bollandists (q. v.) in the 17th e. -Acta Sanctorum (q.v.)-and still in process. The way in which a credulous love of the wonderful, exag-

geration of fancy, and ecclesiastical enthusiasm, at times even pious fraud, mixed themselves with true history in these old narratives, caused stories of a religious or ecclesiastical nature generally to be designated as legends, in distinction from authentic ecclesiastical history; and thus the word 'legends' also serves to some extent to separate religious from secular traditions, and from those wild tales (Ger. märchen) that delighted the peasantry of mediæval Europe. Legends in this sense of the word, as ecclesiastical sagas, are found not only in the Rom. Cath., but also in the Greek Church, and their origin reaches back to the early ages of Christianity-Christ himself, the Virgin, John the Baptist, the apostles, and other prominent personages of the gospel history having become, at a very early period, the subject This tendency to mythic embellishment showed itself especially in regard to Mary and the later saints, martyrs, and holy men and women. ecclesiastical literature of the Eastern and Western Churches, especially of the latter, the legends found an entrance into the national literature of Christian nations. Among the Germans, this was markedly the case after the second half of the 12th c., though specimens of legendary poems are not altogether lacking at an earlier period: e.g., the Kaiserchronik (Imperial Chronicle), where the legendary element forms an important part of the whole; and Werner's versified Marienleben (Life of Mary), 1173, etc. The authors of these works were ecclesiastics; but already laymen, too, had appeared in the same field. The poetic versions of the legend of St. Oswald and that of Pilate sprang from this class; and in the following age, when the mediæval poetry of Germany was in its richest bloom, and the fosterers of the poetic art were emperors and princes, rather than ecclesiastics, the legend was employed by laymen on a grand scale, as the subject matter of epic narratives. Thus, Hartmann von Aue (q.v.) worked up into a poem the religious legends about Gregory; Konrad von Fussesbrunnen, those concerning the 'childhood of Jesus;' Rudolf von Ems, those about 'Barlaam and Josaphat' (q.v.); and Reinbot von Durne, those about 'St. George.' Between the 14th and 16th c., legends in prose began to appear, such as Hermann von Fritzlar's Von der Heiligen Leben (about 1343), and gradually supplanted the others. Finally, in the 16th c., when Protestantism began powerfully to influence the whole German literature, the legend disappeared from German poetry, or passed over into the moral-didactic and also the comic narrative, in which form it was employed by Hans Sachs Numerous attempts have been with happiest effect. made to resuscitate it in modern times. The first of the recent poets who clearly apprehended the poetic and spiritual elements of the old Christian legend was Herden (2011) der (q.v.); and since his day, many German poets-for example, the Romantic School '-have endeavored to give these a new embodiment.

LEGENDRE -LEGGE.

LEGENDRE, leh-zhongdr', Adrien Marie: 1752-1833, Jan. 10; b. Paris: eminent French mathematician. He obtained, 1774, a professorship of mathematics in the Military School at Paris, 1783 was admitted a member of the Academy, 1787 was employed by the French govt., with Cassini and Mechain, in measuring a degree of latitude, and was chosen to perform the calculations after the work of observation had been finished. In 1808, he was appointed by the imperial govt. pres. for life of the university, and after the second Restoration, an honorary member of the commission for public education, and chief of the committee of weights and measures. But because in an election to a place in the Acad. he did not vote for the ministerial candidate, he was deprived, 1824, of his pension of 3,000 francs. L. is author of Théorie des Nombres and Eléments de Géométrie, and particularly distinguished himself by his investigation of the difficult subject of the attraction of the elliptic spheroid, and of a method for determining the paths of comets. He showed an impressive magnanimity in publicly welcoming the brilliant discovery in elliptic integrals by two young mathematicians, though it overshadowed his laborious investigation of 40 years.

LEGER, n. lěj'ér: another spelling of Ledger, which sec.

LEGERDEMAIN, n. lěj'ér-dě-mān' [F. léger, light; de main, of hand—from L. manum, the hand]: a deceptive performance which depends on dexterity of hand; slight of hand.

LEGER-LINES, n. plu. *lĕj'ér-līnz'* [F. *léger*, light, and Eng. *lines*]: in *music*, light short lines placed above or below the staff for additional notes. Legerity, n. *lĕ-jĕr'i-tĭ* [F. *légèreté*, agility]: in OE., nimbleness; agility; lightness.

LEGGE, leg, James, D.D., Ll.D.: author: b. Huntly, Scotland, 1815, Dec. 20. He graduated at King's College, Old Aberdeen, 1835; studied in Highbury Theol. Seminary (Congl.), London; was appointed missionary to China by the London Missionary Soc. 1839; took charge of the Anglo-Chinese College at Malacca 1840; was on missionary duty at Hong Kong 1843–73; and since 1876 has been prof. of the Chinese language and literature at Oxford University. Dr. L. is one of the authorities in his department of study. His publications include Notions of the Chinese concerning God and Spirits (Hong Kong 1852); Confucian Analects, Doctrine of the Mean, and Great Learning (1861); Works of Mencius (1861); The Shu King, or Book of Historical Documents (1865); The Shi King, or Book of Poetry (1871); The Ch'un Ch'in, with the Tso Chwan (1872); Life and Teachings of Confucius (1866; 4th cd. 1875); The Life and Works of Mencius (1875); The Book of Ancient Chinese Poetry in English Verse (1876); The Religions of China: Confucianism and Taoism described and compared with

LEGGED—LEGHORN.

Christianity (1880); and (in Max Müller's Sacred Books of the East); The Shu King Religious Portions of the Shi King and the Hsaio King (1879); The Yi King (1882); The Li Ki: Book of Ceremonial Usages, 2 vols. (1886); and The Travels of the Buddhist Pilgrim Fa-hsien in India (1886). He received the degree D.D. from the Univ. of New York City 1842, and LL.D. from Aberdeen and Edinburgh Universities 1884.

LEGGED, LEGGINGS, LEGGETTS: see under Leg.

LEGGETT, leg'et, Mortimer Dormer: soldier: b. Ithaca, N. Y., 1821, Apr. 19. He graduated in medicine 1844, in law 1845; was prof. of pleadings and practice in the Ohio Law College 1855–58; organized the union free school system in O. and became supt. of schools in Zanesville 1858; raised and became col. of the 78th O. inf. 1862, Jan.; was promoted brig.gen. 1862, Nov., brevetted maj.gen. 1864, July, and promoted maj.gen. vols. 1865, Aug.; resigned his commission 1865, Sep. 28; and was appointed U. S. commissioner of patents 1871. He held important commands in the army, and was several times wounded. D. 1896, Jan. 7.

LEGGIADRO, adv. $l \not e j - j \hat{a}' dr \tilde{o}$ [It.]: in mus., a direction that the passage to which the word is appended is to be played briskly or gayly.

LEGHORN, a. n. leg'hawrn [originally made at Leg horn]: a kind of plait for bonnets and hats, prepared from the straw of a variety of bearded wheat.

LEGHORN, leg'hawrn, or leg-hawrn' (Livorno): one of the chief Mediterranean seaports, city of Tuscany, in the modern Italian province of Livorno (q.v.), 50 m. w.s.w. of Florence, 14 m. s.s.w. of Pisa; lat. 43° 32′ 7″ n. long. 10° 17′ 7″ e. Pop. (1881) of L., 77,781; of commune, with the three suburbs, Torretta, Sta Lucia, and S. Jacopo, 97,615; (1901) 98,321.

Till 1868, L. was a free port, and it has long been one of the leading emporiums of trade in Italy. Its import trade used to be estimated at \$10,000,000 yearly; the chief imports being from England and France. Even since the abolition of its privileges as a free port, the trade of L. has not been lessened, but only changed. is now less a port of deposit than of transit to and from the interior of the kingdom. The town is partly intersected with canals, by which merchandise is conveyed from the harbor to the numerous warehouses of the city. The port consists of an inner and outer harbor, the latter being sheltered by a mole, which projects into the sea more than half a mile, close to the great lighthouse. To secure increased shipping accommodation, a new harbor has been constructed for the reception of vessels of considerable tonnage. The roadstead, which is capacious, lies w.n.w of the harbor, and is protected by towers and a castle. On an island south of the harbor stands the lazaretto. The town is connected by railways

LEGIBLE-LEGION.

with Rome, Pisa, Carrara, and the other parts of Italy. The population comprises natives of many climes (Greeks, Armenians, Turks, Moors, etc.), whose foreign appearance and striking garb give a picturesque appearance to the place. This concourse of strangers is further enlarged in the summer by a great influx of native and foreign visitors, who resort to L. for its baths and mineral springs, the latter of which have high medical repute. The town itself is chiefly modern and destitute of the grand historical associations and classical monuments which invest most Italian cities with their highest interest; its fine Mediterranean site, animated aspect, and great commercial life, are its principal at tractions. The streets are regular and well paved, but narrow, and being flanked by high houses, they are mostly dark and gloomy. The churches are numerous Many private dwellings are tasteful and luxurious, and charming villas abound in the environs. The public institutions are well organized, and include three hospitals, an observatory, a poorhouse, and a free library. The circuit of the town has been extended by demolition of old fortifications, and extension of the barriers or city walls. The manufactures of L. are various and important; it possesses great factories of oil, tobacco, soap, salt, and the well-known liqueur Rosolio; its distilleries and dyeing works are celebrated. Its chief exports are raw and manufactured silks, straw-hats and straw-plait ing, oil, fruits, borax, cheese, anchovies, marble, sulphur. and coral. Its imports comprise colonial produce, raw and manufactured cotton, and wool, cutlery, hardware, metallic goods, earthenware, and salted fish.

Toward the end of the 13th c., L. was an unprotected village, which assumed some importance only on the destruction of the port of Pisa, and especially on its being assigned to Florence 1421. Alessandro de' Medici constructed its citadel and fortified the town. Cosmo I. declared it a free port, and from that time dates its prosperity. In the 17th c., under Ferdinand I., it had great commercial importance; and during the French imperial occupation of Italy, L. was proclaimed the chief town of the dept. of the Mediterranean. In the Italian revolutions succeeding 1830, L. took a foremost part.

LEGIBLE, a. lěj'ĭ-bl [OF. legible—from L. legib'ĭlĭs. that can be read—from lego, I read: Sp. legible: It. leggibile]: that may be read; clear and distinct; apparent. Leg'ibly, ad. -blĭ. Leg'ibleness, n. -bl-nes, or Leg'ibli'ity, n. -bĭl'ĭ-tĭ, the quality or state of being legible.

LEGION, n. lē'jūn [F. légion—from L. legionem, a body of troops levied—from lego, I gather or select: It. legione]: a great number, as in the Scripture phrase, my name is Legion; among the Romans a large organized body of troops, integral part of an army (see below). Le'GIONARY, a. -ėr-t, relating to or consisting of a legion; containing a great number: N. one of a legion. Legion of Honor, a French order of merit (see below).

LE'GION, in the Roman Military System: body of troops corresponding in force and organization to the modern army-corps. It differed in constitution at different periods of Roman history. In the time of the Republic, a L. comprised 4,500 men, thus divided: 1,200 hastati, or inexperienced troops; 1,200 principes, or well-trained soldiers; 1,200 velites, or skirmishers; 600 triarii, or pilani, veterans forming a reserve; and 300 equites, knights who acted as cavalry, and belonged to families of rank. During this period the legions were formed only for the season; standing armies being of later

The hastati, principes, and triarii formed three separate lines, each divided into 10 maniples or companies, of 120 men each in the case of the two front lines, and of 60 men in the triarii. A maniple was commanded by a centurion or capt., who had a second-centurion, or lieut., and two sub-officers, or sergeants, under him: as noncommissioned officers, there was a decanus, or corporal, to every squad or tent of ten men. The senior centurion of each line commanded that line, and had therefore functions corresponding to a modern lieut.colonel. The primipilus, or senior centurion of the triarii, was the most important regimental officer, and commanded the legion in the absence of the tribunes. The 300 cavalry formed a regiment of ten turmæ, or troops of 30 horsemen, each under three decurions, of whom the senior had the command. The velites were light troops, not forming part of the line of battle; had apparently no officers of their own; and were attached to the 30 maniples in equal proportions. The staff of the L. consisted of six tribunes, who managed the paying, quartering, provisioning, etc., of the troops, and who commanded the L. in turns for a period each of two months. This changing command, though inconvenient, lasted till the times of the civil wars, when a legatus, or lieut.gen., was appointed as permanent commandant of the legion.

The offensive weapons of the hastati and principes were two barbed iron-headed javelins, one of which was hurled at the enemy on the first onslaught, while the other was retained as a defense against cavalry. The triarii had long pikes. In addition to these arms, every soldier bore a short, strong, cut-and-thrust, two-edged sword. The legionaries' defensive armor consisted of plumed helmet, breastplate, iron-bound boot for the right leg, and a semi-cylindrical shield 4 ft. long by $2\frac{1}{2}$ broad. The velites had no defensive armor, were lightly armed, and in action usually operated for flanking. Each maniple bore an ensign aloft, and each L. had its distinguishing eagle. Up to the time of Marius, service in a L. was sought as honorable occupation, and only men of some means were eligible; but Marius enlisted slaves, and turned the legions into corps of a purely mercenary army. At the same period, the manipular formation was abolished, the three lines were assimi-

LEGION.

lated, and the L. was divided into 10 cohorts, each of three maniples. Soon the cohorts were raised to 600 men, making the L. 6,000 infantry besides cavalry and velites. It was ranged in 2 lines of 5 cohorts each; but Cæsar altered the formation to 3 lines, of respectively 4, 3, and 3 cohorts.

During the later Empire, the L. became complex and unmanageable; many sorts of arms being thrown together, and balistæ, catapults, and onagers added by way of artillery. Having so degenerated from its pristine simplicity and completeness, the legionary formation was soon overthrown amid the incursions of the victorious barbarians.

LE'GION, THEBAN: in ecclesiastical tradition, a company or league of Christians, abt. A.D. 286, who submitted to martyrdom rather than sacrifice to pagan gods or attack the brother disciples. The tradition refers to the time of Emperor Maximin. The leader of the league was Maurice, who was canonized.

LE'GION, THE THUNDERING (Lat. Legio Fulminatrix): legion of the Roman army, subject of a well-known miraculous legend. During Marcus Aurelius's war with the Marcomanni (A.D. 174), his army, according to this narrative, being shut up in a mountainous defile, was reduced to great straits by want of water; when, a body of Christian soldiers having prayed to the God of the Christians, not only was rain sent seasonably to relieve their thirst, but this rain was turned upon the enemy in the shape of a fearful thunder-shower, under cover of which the Romans attacked and utterly routed them. gion to which these soldiers belonged was thence, according to one of the narrators, called the Thundering Legion. This legend has been the subject of much controversy; and it is certain that the last told circumstance at least is false, as the name 'thundering legion' existed long before the date of this story. There appears, nevertheless, to have been some foundation for the story, however it may have been embellished. The scenes represented on the column of Antoninus. The event is recorded by the pagan historian Dion Cassius (lxxi. 8), who attributes it to Egyptian sorcerers; and by Capitolinus and Themistius, the latter of whom ascribes it to the prayers of Aurelius himself. It is appealed to by the nearly contemporary Tertullian, in his Apology (c. 5), and is circumstantially related by Eusebius, by Jerome, and Orosius. Supposing the substantial truth of the narrative, it may be conjectured that the fact of one of the legions being called by the name 'Thundering' may have led to the localizing of the story, and that it may have, in consequence; been ascribed to this particular legion, supposed to have received its name from the circumstance.

LEGION OF HONOR.

LE'GION OF HONOR: order of merit instituted under the French Republic 1802 by Napoleon, the first consul, as recompense for military and civil services. It was ostensibly founded for the protection of republican principles and the laws of equality, and for the abolition of differences of rank in society, every social grade being equally eligible; but its real aim doubtless was, by popularizing the idea of personal distinction, to pave the way for the establishment of the empire and of the more exclusive titles of nobility that were to accompany it. The proposal for its institution was at first violently opposed by the legislative body and the tribunate, on democratic grounds, and carried eventually by a narrow majority.

The order originally comprised three classes—Grand Officers, Commanders, and Legionaries. The class of Grand Officers was, on the coronation of Napoleon I., The class of divided into Knights of the Grand Eagle (the highest class), and Grand Officers. On the restoration of the Bourbons, the L. was retained, but remodelled so as to lose much of its original character. The eagle was called a cross, and the effigy of Henry IV. replaced that of Napoleon. The Knights of the Grand Eagle became Grand Crosses, the Legionaries were transformed into Knights, and the numerous educational institutions, founded by Napoleon for the children and relatives of the members of the order, were much reduced in scale. 1837, a new military class called Officers was admitted. Under the presidentship of Louis Napoleon, part of the property of Louis Philippe, which had been restored to the state, was set apart as an endowment for the L., and new regulations were made regarding the pensions of the different classes. The original form of decoration was reintroduced, which under the second empire was somewhat modified. As worn then, it consisted of a cross of ten points of white enamel edged with gold; the points connected with a wreath of laurel proper, and in the centre, within an azure circle charged with the words 'Napoléon III., Empereur des Français,' was a head of the emperor. The cross is en-Français,' was a head of the emperor. signed by the imperial crown of France, and worn attached to a red ribbon. The Grand Officers also wore on the right breast a silver star charged with the imperial eagle. The same star was worn on the left breast by the Knights Grand Cross, and their cross was attached to a broad red ribbon which passes over the right shoulder.

The vast numbers of this order, and the insignificance of many of the persons on whom it has been conferred, have detracted much from its value. The number of members 1872 was 69,179; but the law passed in that year, that only one new member should be added for every two vacancies, reduced the membership in five years (1877) to 59,208. The revenue of the College of the L. has been augmented by the addition of property belonging to Louis Philippe. Out of this fund pensions are paid

LEGISLATE-LEGITIMATE.

to those members of the order who have served in the army or navy; the civilian members receive no pension. These pensions amounted 1877 to nearly \$2,250,000. By the existing statutes, candidates in time of peace must have served in some military or civil capacity 20 years; exploits in the field or severe wounds constitute a claim in time of war. Two distributions take place in the year. The nomination of military persons takes place on parade, and of civil in the courts of justice. No ignoble punishment can be inflicted on a member of the order so long as he belongs to it. To rise to a superior rank, it is indispensable, at least for natives of France, to have passed through the inferior grades.

LEGISLATE, v. lěj'ĭs-lāt [F. législatif, having authority to make laws, legislative—from mid. L. legislātīvus—from L. lex or legem, a law, and lātus, carried: It. legislativo]: to make or enact a law or laws. Leg'islating, imp. Leg'islated, pp. Leg'islator. n. -lā-tėr [F. législateur—from mid. L. lēgislātōrem, a lawgiver—from legis, of law; lator, a bearer or proposer]: one who enacts laws; a lawgiver. Leg'isla'trix, n. -trĭks, a female who enacts laws. Leg'isla'tion, n. -lā'shŭn [F.—L.]: the act of making a law or laws. Leg'islative, a. -tĭv, pertaining to enacting; giving or enacting laws; done by enacting. Leg'islature, n. -lā-tūr, the body in a state invested with the power of making or repealing laws; the supreme power in a state. Legist, n. lē'jīst [OF. legiste: F. légiste]: one skilled in law.

LEGITIM, n. le-jit'im [L. legitimus, pertaining to law-from lex, law]: in Scotch law, the portion of a movable estate to which children are entitled on the death of their father. The L., called sometimes Bairn's Part, varies in amount according to the varying number and kinship of the heirs surviving.

LEGIT'IMACY, PETITION TO DECLARE: procedure before a court, by which persons whose legitimacy is doubted can have the question legally decided.

LEGITIMATE, a. le-jit'i-māt [mid. L. legitimātus, declared to be lawful: L. legitimus, pertaining to law—from lex or legem, law: It. legitimo; F. légitime, legitimate]: lawful; born in wedlock; genuine; real; not false; fairly deducible: V. to render lawful. Legit'imating, imp. Legit'imated, pp. Legit'imately, ad. -li, in a legitimate manner; lawfully; genuinely. Legit'imateness, n. -nēs, the state of being legitimate. Legit'imacy, n. -mă-si, accordance with law or established usage; lawfulness of birth, as opposed to bastardy; regular sequence or deduction. Legit'ima'tion, n. -mā'shūn [F.—L.]: the act of rendering legitimate or lawful (see below). Legit'imize, v. -mīz, to render legitimate or lawful. Legit'imize, imp. -mī'zīng. Legit'imized, pp. -mīzd. Legit'imist, n. -mīst, in F. hist., a term now applied to those who support the pretensions of the elder Bourbons to the throne of France.

LEGITIMATION—LEGUME.

LEGITIMA'TION, in Law: the rendering legitimate a person born illegitimate; done by the father subsequently marrying the mother of the child, hence often called L. per subsequens matrimonium. This effect, however, can be produced only provided at the time of the birth the parents might have been married, or there was no obstacle to their then marrying, if so inclined, as, for example, if they were both unmarried, and there was no impediment. Sometimes it has happened that the father, A, or mother, B, after the child's birth, marries a third person, and has children, and after the dissolution of the marriage, A and B then marry. In this perplexing case, the courts have held that the intervening marriage with a third party does not prevent the bastard child, born before that event, from being legitimated by the subsequent marriage of A and B. But it has not been settled what are the mutual rights of the children of the two marriages in such circumstances, though it appears that the legitimate-born children cannot be displaced by the legitimated bastard, The doctrine of L. per subsequens matrimonium is not recognized in England or Ireland, having been solemnly repudiated by the famous statute of Merton, and the maxim prevails there, 'once a bastard, always a bastard.' Also in Scotland, but not in England or Ireland, L. is recognized where the parents were not really married, though they both bond-fide believed themselves to be married: this is called a putative marriage. The Scotch law on these subjects follows the canon law, and the French law is the same. In the United States the law varies: in several states L. is possible by a subsequent marriage, but not in all: see Bastard.

LEGNAGO, $l\bar{a}n$ - $y\hat{a}'g\bar{o}$: fortified town of n. Italy, province of Verona, on the left bank of the Adige, 22 m. s.s.e. from Verona. It has manufactures of hats and leather, and trade in wheat and rice. The country is swampy, and intermittent fevers prevail. L. is one of the fortresses in the famous Quadrilateral (q.v.). Pop. 4,000.

LEGO-, prefix $l\bar{e}$ - $g\bar{o}$ [L. lex, law]: pertaining to or connected with the law.

LEGUME, n. lĕ-gūm', or Legumen, n. lĕ-gū'mĕn [F. légume—from L. legūmen, that which is gathered, pulse—from lego, I gather: It. legume]: a seed-vessel of two valves, having its seeds fixed to one side only, and opening by both sutures, as in the pea; a pod. It occurs in most of the species of the great nat. ord. Leguminosæ (q.v.), of which the Bean and Pea are familiar examples. The legume generally opens when ripe, and then both by the dorsal and ventral suture; whereas the follicle, which nearly resembles it, opens by a suture along its face, and is one-valved. A few legumes do not open, but the sutures are present. Some are divided by transverse partitions (diaphragms); and the kind called a lomentum is contracted in the spaces betwixt the seeds,

LEGUMINOSÆ.

and separates into pieces instead of opening. Legumes, n. plu. -gūmz', the fruit of the pea kind; pulse. Legu-MINE, n. le-gu'min, albuminous substance, resembling white of eggs, found in large propertions in beans, lentils, peas, and other leguminous seeds; vegetable case-The seeds of most leguminous plants (peas, beans, lentils, etc.), and of the sweet and bitter almond, eontain a proteine or albuminous body, which in all essential properties corresponds with the easeine of milk. For example, it is precipitated from its solutions by rennet, aeetie acid, alcohol, etc., and is not eoagulated by boiling; while, as in the case of milk, the application of heat oecasions the formation of a pelliele on the surface. The affinity of the two kinds of easeine is further shown by the fact, that cheese is made by the Chinese from peas and beans. In order to obtain legume, peas, beans, or lentils are well soaked in hot water, and after being reduced to pulp, are mixed with considerable water. The starch, membranes, etc., soon sink to the bottom, and the legumine must be precipitated by acetic acid from the decanted or filtered fluid. Dry peas contain about one-fourth of their weight of legumine. LEGU-MINOUS, a. le-gū'mi-nus, pertaining to the pea or bean tribe.

LEGUMINO'S Æ (Fabacece of Lindley): great natural order of exogenus plants, containing herbaceous plants, shrubs, and trees, many of the greatest magnitude. The leaves are alternate, usually compound, and have two stipules at the base of the leaf-stalk, which often soon fall off. The inflorescence is various. The calyx is inferior, 5-parted, toothed or cleft, the segments often un-The petals are five, or, by abortion, fewer, inserted into the base of the calyx, usually unequal, The stamens are few or often Papilionaceous (q.v.). many, distinct or variously united. The ovary is 1celled, generally of a single carpel; the style simple, proceeding from the upper margin, the stigma simple. The fruit is either a Legume (q.v.) or a Drupe (q.v.). The seeds are solitary or numerous, occasionally with an aril, often eurved: the cotyledons very large.—There are three sub-orders: 1. Papilionaceæ, with papilionaeeous flowers; 2. Cæsalpineæ, with irregular flowers and spreading petals; 3. Mimoseæ, with small regular flowers.—This nat. ord. contains almost 7,000 known species of which about 5,000 belong to the sub-ord. Papilionacew. They are spread over all parts of the world, from the equator to the poles, but their number is greatest in tropical and sub-tropical regions. They are applied to a great variety of purposes, and some are of great importance in domestic economy, the arts, medicines, etc. To this order belong the Bean, Pea, Kidney-bean, and all kinds of pulse; Clover, Liquorice, Broom, Laburnum, Lupine, Senna, and many other medicinal plants; Tamarind, Logwood, Indigo, and numerous others which afford dyes, etc.; the Acacias, Mimosas, etc. Many

LEH-LEIAH.

species are interesting for beauty of form, foliage, or flowers. In the seeds of many is found a nitrogenous substance called Legumine or Vegetable Caseine.

LEH: see LE.

LEHIGH RIVER, $l\bar{e}'h\bar{\imath}$: rises in the s. extremity of Wayne co., Penn.; flows s.w. to Whitehaven with Luzerne and Lackawanna cos. on its right and Monroe and Carbon cos. on its left, s.e. from Mauch Chunk to Allentown, thence n.e. to its junction with the Delaware river at Easton; length about 120 m. It flows through a picturesque mountain region, and a gap in the Kittatinny Mountain 10 m. below Mauch Chunk is an outlet for a noted anthracite coal district. It is navigable 84 m. from its mouth, and has railroads skirting its banks between Easton and Whitehaven.

LE'HIGH UNIVERSITY: Protestant Episcopal institution in South Bethlehem, Northampton co., Penn.: founded 1865 through the liberality of Asa Packer, who gave 115 acres of land, on the s. side of the Lehigh river and the n. slope of the South Mountain, and endowed it with \$500,000. After his death it received further endowments of \$1,500,000, and for its library \$500,000. The library contains about 115,000 vols. All the educational facilities and apparatus are on the most liberal scale. The principal buildings, which are very handsome, are Packer Hall, the chemical laboratory, metallurgical laboratory, physical laboratory, Sayre observatory, university library, gymnasium, and chapel. 1871 tuition is free. Special attention is given to civil, mechanical and mining engineering, chemistry, metallurgy, and in general to furnishing thorough technical education for those professions which have developed the peculiar resources of the surrounding region. Number of professors and instructors (1902-3) 50; students Pres. Thomas M. Drown, LL.D.

LEIAH, $l\bar{a}'y\hat{a}$ or $l\bar{a}'\bar{e}-y\hat{a}$: important trading town of India, in the Punjab, in a fertile district on the left bank of the Indus, 60 m. s. of Dera Ismael Khan; lat. 31° n., long. 71° e. Besides being a mart for the produce of the surrounding district, it carries on an extensive transit-trade between the Punjab and the regions w. of the Indus. Provisions, metals, grain, and cotton and wool are chief articles of sale. Pop. (1868) 17,033.

LEIBNITZ, līb'nīts or līp'nīts (more accurately Leib-NIZ), GOTTFRIED WILHELM VON: one of the most extraordinary examples of universal scholarship on record: 1646, June 21 (o.s.)—1716, Nov. 14; b. Leipzig, where his father was prof. of law. He studied at the 'Nicholas School' of his native city, under Thomasius; but he derived much more of the vast store of miscellaneous learning which his after-life exhibits from his private studies in a library to which he had access. entered the univ. with peculiar advantages, in his 15th year, selecting the law as his profession, but giving attention also to philosophy and literature. He spent some time at the Univ. of Jena, and on his return, presented himself for the degree in law, for which he composed two essays of very remarkable merit. In consequence of his youth, however, he was refused the degree at Leipzig, and ultimately (in his 20th year), 1666, graduated at Altdorf, where he was offered, but declined, a professorship; accepting in preference the post of sec. and tutor in the family of the Baron von Boineburg, to whom he rendered, 1667-72, a variety of literary and politicoliterary services, and through whose recommendation he was appointed member of the judicial council in the service of the Abp.-elector of Mainz. In 1672 he accompanied Boineburg's sons to Paris, and there submitted to Louis XIV. an essay entitled Consilium Æguptiacum. containing a plan for the invasion of Egypt, which is by some supposed to have had distant result in the Egyptian expedition of Bonaparte 1798. In this tour, which extended to London, he formed the acquaintance of the most eminent philosophers of France and England, and among them of Newton. On the death of the Elector of Mainz, L., declining an appointment at Paris which would have necessitated his becoming a Rom. Cath., entered the service of the Duke of Brunswick, and followed that prince, 1676, as privy-councilor and librarian, to Hanover, where he permanently fixed his residence. His literary services to this court were very miscellaneous. After a tour of historical exploration, he prepared a series of works illustrating the history of the House of Brunswick, 7 vols. of which were published by himself, and two have been edited in our own time by Dr. Perz, Annales Imperii Occidentis Brunswicensis (1843-45). He undertook likewise the scientific direction and organization of the royal mines, into which he introduced many improvements; and at the desire of the prince. he took active part in the negotiations for church union and the theological discussions connected therewith, which formed the subject of a protracted correspondence with the celebrated Bossuet (q.v.) and with M, Pelisson, and led to the preparation, on his own part, of a very curious exposition of doctrinal belief (published from his MS. within this century, under the title Systema Theologicum), which, though written in the assumed character of a Rom. Catholic, was intended to

LEIBNITZ.

form a basis of negotiation. His private studies how ever, were chiefly philosophical and philological. His correspondence or these subjects was most extensive, and he contributed largely to almost every literary and scientific journal of his day. He was the chief organizer of the Acad. of Berlin, of which he was the first pres., and originated both at Dresden and Vienna a project for the establishment of similar bodies. It was to him, likewise, that Peter the Great, who invited him to a meeting at Torgau, and bestowed on him a pension of 1,000 rubles, with the title of privy-councilor, owed the plan of the since celebrated Acad. of St. Petersburg. On the accession of the elector George to the crown of Great Britain, as George I., L. was disappointed in his expectation of accompanying the prince to his new court; nor did he long survive that event. His death occurred somewhat unexpectedly at Hanover. His biographers justly complain that his memory was treated with little honor by his contemporaries; but a tardy atonement for their neglect has been recently offered by the erection of a monument in one of the squares of the city of Hanover. The scholarship of L., as regards the vastness of its range, is scarcely paralleled. He was eminent in languages, history, divinity, philosophy, political studies, experimental science, mechanical science, and even belles-lettres. But it is chiefly through his philosophical reputation that he lives in history. It would be difficult to convey, in a popular sketch, a correct notion of his philosophical system, especially as he has nowhere himself methodized it. He was deeply influenced by the Cartesian philosophy, but he differed from Descartes both in his method and in some of his principles, tending to a dynamical, as distinguished from Descartes's mechanical, theory of the universe. The most important peculiarities of L's system may be reduced to four: his doctrine as to the Origin of Ideas, his mystical theory of Monads (q.v.), the 'Pre-established Harmony' and the theory of Optimism (q.v.). The 'Pre-established Harmony, requires a few words of explanation. The object of this singular conception was to explain the mysterious problem of the joint action of mind and body, or even in general the joint action of any two or more of the socalled 'monads,' since L. held that no two 'monads' could act upon each other. Descartes had resolved this prob-lem by his theory of assistance, which attributed all action to the direct assistance of God. L., rejecting this hypothesis, supposed the mind and the body to be two distinct and independent machines, each having its own independent, though simultaneous action; but both so regulated by a harmony pre-established by God, that their mutual actions shall correspond with each other, and shall occur in exact and infallible unison. This harmony L. illustrated by the example of two time-pieces, one of which should be made to strike just when the other pointed to the hour. In the same way, just at the moment when the mind freely determines itself to a peculiar act, the body, by a harmony pre-arranged by God, will produce the particular action which is required to give efficacy to the volition of the mind. This view has not taken rank as a useful conception in philosophy.-L.'s philosophical system in general ruled German thought for a century. It was brilliant, but crude in some parts and not wrought into thorough self-consistency; yet it foreshadowed some of the leading generalizations of modern physical science. One of the most painful incidents in the literary and scientific history of L. was his controversy with Newton as to priority in discovery of the method of the calculus: see Calculus: FLUXIONS. L. was the inventor of a calculating-machine, the working-model of which is preserved at Göttingen. His works were collected first by Dutens, 6 vols. 4to., Geneva; his philosophical works by Raspe, Amsterdam 1767; and his letters at Lausanne and Geneva, 2 vols. 4 to 1745. Other collective editions are those of Pertz (1843-62); Foucher de Careil (begun 1859), and Klopp (begun 1864). The best ed. of L.'s philosophical works is Erdmann's (1840); and the best life of L. is by Gulirauer, Leibnitz, Eine Biographie, 2 vols. Svo. (Breslau 1842).

LEICESTER, les'ter: town of England, municipal and parliamentary borough, capital of the county of L.; on the right bank of the Soar, about 100 m. n.n.w. of London. It contains numerous interesting churches, one of which, St. Nicholas, is built partly of bricks from an ancient Roman building near. There are several educational and benevolent institutions. The Cook Memorial Hall and a public park were opened 1882. Manufactures of boots and shoes, and of woolen and hosiery goods, lace-making, wool-combing and dyeing, are extensively carried on. L. is the centre of a famous agricultural and wool-raising district. There are about 12 fairs annually. Pop. (1891) 142,051; (1901) 211,574.

L., known to the Romans as Ratæ, derives its present name either from Leire, former name of the Soar, or from its having been a Civitas Legionum, a station or camp (castra) of the legions, which the Saxons would translate into Legeo-ceaster, corresponding to the British or Welsh Caer-leon. Under the Lancastrian princes, its castle, now almost entirely destroyed, was frequently a royal residence. The ruins of the abbey of St. Mary Pré, or De Pratis, where Cardinal Wolsey died, still re-

main.

LEICESTER, ROBERT DUDLEY, Earl of: abt. 1531–1588, Sep. 4; son of John Dudley, Duke of Northumberland. His father was beheaded for his part in the cause of Lady Jane Grey, and L. himself was imprisoned on the same account. Though he had been sentenced to death, he was liberated 1554; and 1558, on the accession of Elizabeth, the dawn of bis fortune came. He was

LEICESTER-LEICESTERSHIRE.

m de master of the horse, knight of the garter, a privycouncilor, high steward of the Univ. of Cambridge, Baron Dudley, and Earl of Leicester. For these high honors, he seems to have been indebted solely to a remarkably handsome person and a courtly manner, for the course of his life reveals not one admirable quality either of head or heart, except, perhaps, his princely tastes as set forth in Walter Scott's Kenilworth. When young, he married Amy, daughter of Sir John Robsart. The general voice of the times has charged him with being accessory to her murder; and it is certain that she died suddenly, and very opportunely for his ambitious views, he being at that time a suitor for the hand of Elizabeth. Suspicious as the case may appear, the fact should not be overlooked that proof of Dudley's guilt has never been produced. Elizabeth gave out that she wished him to marry Mary of Scotland; but in this the English queen is suspected of having acted with her usual insincerity. She encouraged L. openly as a suitor long after his arrogance had disgusted the nobles, and his profligacy had brought him into disrepute with the nation. His marriage to Lady Essex excited the anger of his royal mistress, but she soon forgave him. In 1585, he went into the Low Countries at the head of a military force; but on this, as on two subsequent occasions, he showed himself utterly unfitted for command. He died suddenly, and it was commonly said that he was poisoned by his wife, she having given him a potion which he had intended for her-a suspicion for which no reason is known other than the popular distrust which hung around him and all that concerned him.

LEICES'TER, SIMON DE MONTFORT, Earl of: see Montfort, Simon de.

LEICESTERSHIRE, lĕs'tėr-shėr: inland county of England, s. of Derby and Nottingham; 511,719 acres. The surface of the county is covered by low hills. The district in the s.w., still called 'Charnwood Forest,' retains its name though now almost destitute of wood. The hills of the 'Forest,' though inconsiderable in height, are rugged, distinct, and individual in outline. From the highest, Bardon Hill, 902 ft., an extensive view is obtained. The county belongs to the basin of the Trent, which borders it: tributaries of the Trent in L. are the Soar, Wreak, Anker, Devon, Mease, and Avon. The climate of L. is mild, and the soil, which varies in fertility, is chiefly loamy. The richest tracts are kept in pasture, for which this county is famous. In 1880, the acreage under corn crops was 94,090; green crops, 21,885; and permanent pasture, 312,113. Grazing, and sheep and cattle breeding, are carried on with great skill and success. An improved long-horn is the favorite breed of cattle. In 1880, there were in the county 17,950 horses; 126,902 cattle; 357,757 sheep; and 21,596 pigs. The 'Stilton' variety of cheese is for the

LEIGH-LEIGHTON.

most part made in this county. Coal-mines are worked, and granite, slate, and freestone quarried. The staple manufacture is hosiery, for which mostly home-bred sheep supply the wool. Pop. (1871) 269,311; (1881) 321,258; (1891) 379,214; (1901) 225,896.

LEIGH, n. $l\bar{e}$ [a variant of lea, a meadow, a pasture]: a frequent suffix in English place names, especially in the s.w. counties, as Budleigh, Chumleigh, etc.: written also, ley, lea.

LEIGH, $l\bar{e}$: rapidly increasing poor-law union in Lancashire, England, a station on the Bolton and Liverpool railway, 13 m. w. of Manchester. Silks, cambrics, muslins, and fustians are extensively manufactured; cotton-spinning and weaving are carried on; there is a large foundry where agricultural implements are extensively made; and in the vicinity are productive coalmines and flour-mills. The local govt. board was formed 1875 by amalgamation of the boards for the towns of West Leigh, Bedford, and Pennington. Pop. of dist. (1861) 10,621; (1871) 17,623; (1881) 21,733; (1891) 28,702.

LEIGHTON, lā'ton, Sir Frederick: artist: Dec.3—1896, Jan. 25: b. Scarborough: studied drawing in Rome 1842-3, entered the Royal Acad. at Berlin 1843, pursued a general educational course at Frankfort, spent a year in art study in Florence, and completed his first painting in Brussels 1848. He continued studying in Frankfort, Paris, and Vienna, and made his first exhibition in the Royal Acad., London, 1855. He was elected an associate of the Royal Acad. 1864, academician 1869, and pres. 1878; was knighted, nominated an officer of the Legion of Honor, and appointed pres. of the international jury of painting at the Paris Exhibition 1878, and was pres. of the English commission on the graphic arts at the Vienna Exhibition 1883. He produced a very large number of religious, classical, and dramatic paintings, illustrated George Eliot's Romola, and executed many drawings for wood-engravers. D. London.

LEIGHTON, ROBERT, Archbishop of Glasgow: 1611–84; son of Dr. Alexander L. who had suffered under Laud for questioning the divine right of Prelacy. He entered the Univ. of Edinburgh 1627, took his degree M.A. 1631, and afterward went to France, where he resided with some relatives at Douay, and formed the acquaintance of several Rom. Cath. students, whose Christian virtues confirmed the natural charity of his spirit. L., indeed, could never have been a bigot. Gentle, tender, and pious from his earliest years, he shrank from all violence and intolerance; but his intercourse with men whose opinions were so different from his own, convinced his reason of the folly and sinfulness of 'thinking too rigidly of doctrine.' Returning to Scotland, he was appointed, 1641, to the parish of Newbattle, near Edinburgh; but he was not militant enough to please his fierce co-presbyters. They appeared to

LEIGHTON-BUZZARD.

him, who had studied far more deeply than any Scotchthan of his time the various ecclesiastical polities of Christendom, truculent about trifles. According to Bp. Burnet, 'he soon came to dislike their Covenant, particularly their imposing it, and their fury against all who differed from them. He found they were not capable of large thoughts; theirs were narrow as their tempers were sour; so he grew weary of mixing with them. Yet it is not easy to approve the facility with which he fraternized with the party that had inflicted such horrid cruelties on his excellent father, 1630, for merely publishing a book in favor of Presbyterianism. In 1652, he resigned his charge, and in the following year was elected principal of the Univ. of Edinburgh, a dignity which he retained 10 years. Earnest, spiritual, and utterly free from selfish ambition, he labored without ceasing for the welfare of the students. After the restoration of Charles II., L., who had long separated himself from the Presbyterian party, was, after much reluctance, induced to accept a bishopric. He chose Dunblane, because it was small and poor. Unfortunately for his peace, the men with whom he was now allied were even more intolerant and unscrupulous than the Presbyterians. The despotic measures of Sharpe and Lauderdale sickened him. Twice he proceeded to London (1665,69) to implore the king to adopt a milder course—on the former of these occasions declaring 'that he could not concur in planting of the Christian religion itself in such a manner, much less a form of government.' Nothing was really done, though much was promised, and L. had to endure the misery of seeing an ecclesiastical system which he believed to be intrinsically the best, perverted to the worst of purposes, and himself the accomplice of the worst of men. In 1670, on the resignation of Dr. Alexander Burnet, he was made Abp. of Glasgow; an office which he accepted only on the condition, that he should be assisted in his attempts to carry out a liberal measure for 'the comprehension of the Presbyterians.' His efforts, however, all were in vain; the high-handed tyranny of his colleagues was renewed, and L. felt that he must resign, which he did in 1673. After a short residence in Edinburgh, he went to live with his sister at Broadhurst, Sussex, where he spent the rest of his days in a retired manner, devoted chiefly to works of religion. L.'s best works (he published nothing during his lifetime) are in an ed. published at London (4 vols. 1825). All his writings are pervaded by a spirit at once lofty and evangelical. The truths of Christianity are set forth in the spirit of Plato. It was this that recommended them so much to Coleridge, whose Aids to Reflection are only commentaries on the teaching of the saintly archbishop.

LEIGHTON-BUZZARD, lā'ton-bŭz'erd: market-town of Bedfordshire, England, in a large agricultural district, 40 m. n.n.w. of London. It has claims to antiquity—its

LEININGEN-LEIPOA.

church was erected in the beginning of the 13th c., and in its market-place is an ancient and elegant pentangular cross. Many of the inhabitants are employed in making straw-plait. Pop. about 5,000.

LEININGEN, lī'nīng-ēn: one of the wealthiest of the mediatized houses of Germany: formerly the name was applied to a German county in the dist. of Worms and Spires, with which, in the beginning of the 13th c., the county of Dachsburg became connected as part of the family possessions. The family is one of the oldest still existing in Germany. In 1779, the head of one of the branches into which it had become divided, the Count of Leiningen-Hardenburg-Dachsburg, was raised to the rank of prince; but the peace of Lunéville deprived him of his ancient possessions—about 252 sq. m. on the left bank of the Rhine. He received, however, a compensation in other parts of Germany; and though no longer an independent prince, the princely head of the House of L. retains his rank and wealth, his possessions being within the territories of Baden, Bavaria, and Hesse.

LEINSTER, lin'ster or len'ster: one of the four provinces of Ireland, in the s.e. portion of the island; bounded e. by St. George's Channel and the Irish Sea; 4,876,933 acres; pop. (1891) 1,191,782; (1901) 1,152,829. At the English invasion (1170), this province formed two kingdoms, those of L. and Meath. Previously to the reign of Henry VIII., the province had been divided into the counties of Dublin, Meath, Louth, Kildare, Carlow, Kilkenny, and Wexford. The following counties were erected subsequently: Wicklow, formed from a portion of the county of Dublin; West Meath and Longford, from a part of Meath; and King's and Queen's Counties formed out of part of Kildare.

LEIOTRICHI, n. $l\bar{\imath}$ -ŏt'r $\bar{\imath}$ -k $\bar{\imath}$ [Gr. leios, smooth; thrix, trichos, hair]: smooth-haired people, in distinction from those with crisp or woolly hair; one of the two classes into which Huxley has divided man. Leiot'richous. a-k $\bar{\imath}$ s, having smooth hair; belonging to or characteristic of the Leiotrichi or smooth-haired people.

LEIPA, or Leippa, $l\tilde{i}'p\hat{a}$: town of Bohemia, 42 m. n.n.e. from Prague; a place of considerable industrial activity, having manufactures of woolens, cotton, glass and earthenware. Pop. 9,500.

LEIPOA, lī-pō'a: genus of gallinaceous birds, of family Megapodidæ, of which the only known species is L. ocellata, native of Australia, inhabiting sandy and bushy plains. It is called L., or NATIVE PHEASANT, by the colonists. Like the Australian jungle-fowl, the L. constructs mounds of sand, or earth, and leaves, in which to lay its eggs. More than a dozen are often found in a nest. They are about three times as large as those of a common fowl; and are much esteemed as food. When pursued, it seeks to escape rather by running and hiding in the bush, than by the use of its

LEIPZIG.

wings. Few birds seem more likely to prove useful in domestication than the Leipoa.



Leipoa (Leipoa ocellata).

LEIP'ZIG, Colloquy of: private and friendly discussion on disputed points of doctrine between Reformed and Lutheran theologians 1631, Mar. 3-23, occasioned by the meeting of the Prot. princes in Leipzig. The Reformed invited the Saxon Lutherans to a conference, sanctioned by the elector of Saxony, with a view to some possible agreement. The Augsburg Confession was taken as basis of examination: see Augsburg Confession. Agreement was easily reached on articles 1, 2, 5-9, 11-28; but 3 and 10 developed differences that could not be harmonized.

LEIPZIG, līp'tsĭċh, or LEIPSIC, līp'sĭk, (formerly Libzk or Lipzk, said to mean the home of the linden or lime trees, from the Slavic Lip or Lipa, a lime-tree): city of the kingdom of Saxony, about 65 m. w.n.w. of Dresden, 6 m. from the Prussian border, in a large and fertile plain. Pop. (1871) 106,925; (1890) 353,272; (1900) 455,120; the vast majority are Lutherans. The Elster, the Pleisse, and the Parthe flow through or past the city, and unite about 3 m. below it. The inner or ancient city was formerly surrounded by walls, which have now disappeared, but it is still separated from the far more extensive suburbs (Friedrichs-stadt, Johannes-stadt, etc.) by promenades planted with beautiful avenues of lime and chestnut trees. The old town (or inner city) keeps its quaint mediæval aspect. Many of its streets are narrow and crooked; those of the more modern part are wide and well built. The Rosenthal is a delightful public park. The inner city is the principal seat of business and merchandise. Of the public buildings of L., few are in any way remarkable. The two principal city churches, the Thomaskirche and the Nicolaikirche, date from 1496 and 1525 respectively. The stately Rathhaus

(town-hall) was built 1556. The Gewandhaus, in which for 100 years some of the best concerts in Europe were given, was so ealled as being built over a Drapers' Hall; the old building was pulled down 1881, and a new one built. An old castle, the Pleissenburg, is now used for government offices and barracks; the ditch has become a place for drill; and the tower is now an observa-The finest buildings in L. are the Museum, built 1856-58, and the new Theatre, one of the largest and handsomest in Germany. Near it are the main buildings of the university, which is equipped also with spacious anatomieal, physiological, and other laboratories in other parts of the town. The univ. owes its origin to the removal of 2,000 German students from Prague to L. 1409, in eonsequence of disputes between the Bohemians and Germans. It has always maintained a high reputation among the universities of Germany, and many distinguished names are connected with it. There are more than 100 professors and 50 lecturers on the teaching staff; and the number of students, about 3,600 (1892), is less than the total at Vienna and at Ber-The library eontains 350,000 vols. and 4,000 mss.; and the City Library has 110,000 vols. and 2,000 mss. L. is the eentre for the administration of a wide dist.; and 1877 it was made the seat of the supreme courts of justice for the German empire. The fown has many educational institutions, including two gymnasia, several benevolent foundations, numerous scientific associations, and various institutions for the cultivation of the fine arts, particularly the conservatorium of music, which is reekoned one of the first in Europe: see Conserva-TOIRE.

The three annual fairs (at Easter, Miehaelmas, and the New Year, lasting three to five weeks) add much to the importance of L., and render it, with the exception of Hamburg, the greatest seat of trade in Germany. The origin of these fairs is traced back more than 600 years. They are attended by Jews, Turks, Greeks, Armenians, Persians, and even (of late) by Chinese. The accession of Saxony 1833 to the German Customs Union (Zollverein), and the opening of railways, produced a great increase of the concourse and of the business at these fairs, which had previously begun to decline. Transactions to the extent of 70,000,000 thalers (more than \$50,000,000,) now take place at the Easter fair. The wool-market, in June, is much frequented. An enormous trade is done in leather, skins, and hides.

L. is the principal seat of the book-selling and publishing trade in Germany, and indeed, in this respect, ranks third among cities of the world, eoming immediately after London and Paris. More than 300 houses are engaged in the book-trade. There were also (1891) 83 printing establishments. Here the German booksellers have founded a common exchange, and annual settlements of accounts are made at the Easter Fair, when

several hundred booksellers meet here by commissioners and settle their accounts. It is claimed that about 5,000 firms are represented by some sort of commissioners at Leipzig. In consequence of this activity, L. has become the principal seat of type-founding in Germany. Among its manufactures are piano-fortes, scientific instruments, wax-cloths, oils, chemical products, perfumes, etc.

The city sprang up round a castle built by King Heinrich I., at the junction of the Pleisse and the Parthe. It is mentioned as a town first in 1015, and in the latter part of the 12th c., had 5,000 to 6,000 inhabitants. It gradually increased in prosperity and importance. The famous Leipzig Disputation between Luther, Eck, and Carlstadt, 1519, greatly tended to the promotion of the Reformation. (For another theological debate, see Leipzig, Colloquy of.) The Leipzig Interim, issued 1548, Dec. 22, was drawn up by Melanchthon and six other theologians. Its great concessions to the Rom. Cath. Church in respect to various outward observances, raised intense opposition among the Lutherans, and four years later it was revoked. L. suffered grievously in the Thirty Years' War, in which it was five times besieged and taken, and again in the Seven Years' War; and though the commercial changes connected with the French Revolution at first affected it very favorably, yet it suffered not a little amid the terrible struggles of 1812, when it was alternately in possession of the French and of the allies.

The immediate neighborhood of L. has been the scene of two battles of great importance in the history of Germany and of Europe—the battle of Leipzig, or of Breitenfeld (q.v.) 1631, Sep. 7; and the great battle of Leipzig—called the Battle of Nations, which continued for three days—1813, Oct. 16–18. The latter was one of the most bloody and decisive of those which affected the deliverance of Europe from French domination. The troops under Napoleon in this battle amounted to about 180,000 men, and those of the allies, commanded by Prince Schwarzenberg, Marshal Blücher, and Bernadotte, Crown-prince of Sweden, to almost 300,000. The loss of the French was reckoned at about 38,000 killed and wounded, and 30,000 prisoners; that of the allies at about 48,000. The victory of the allies was complete, and the French had to evacuate Leipzig.

LEISLER, līs'ler, Jacob: born Frankfort, Germany; died New York 1691, May 16. He came to America as a soldier of the Dutch W. India Co., 1660; leaving the army, he accumulated money as an Indian trader; was appointed commissioner of the forced loan imposed by Colve; lived at Albany and became involved in the ecclesiastical difficulties there, 1676, losing money and reputation through a lawsuit; on his way to Europe was captured by pirates, 1678, and had to pay a heavy ransom. Under Gov. Dougan he was appointed a commissioner of the court of admiralty, New York, 1683. In

1689, May, taking occasion from the English revolution, L. headed a mob which seized the fort and public funds 'for the preservation of the Protestant religion;' June 8 was deelared 'captain of the fort,' which he repaired and strengthened by a battery of 6 guns outside its walls, where now is 'the Battery.' Nieholson, who had suceeded Dougan as gov., becoming alarmed, sailed to England, and Mayor van Cortlandt retired to Albany. L as commander-in-chief of the province exercised all the power of governor; having declared for the Prince of Orange, he tried to bring into subjection Albany and the n. parts of the province, which refused to recognize his authority. A dispatch from William and Mary to Nicholson he construed as an appointment for himself as royal lieut.gov.; swore in a council; engaged vigorously in the expeditions against the French, and sent a fleetfrom New York against Quebec, 1690. On Sloughter's appointment as gov., L. refused to surrender the fort to him until Sloughter should prove his identity and have sworn in his council. The gov. then had him arrested, with his son-in-law and secretary, Milborne, tried them for treason and murder, and the unjust sentence of death was executed. Leisler's son, 1695, seeured the passage of an act of parliament reversing his father's attainder; and 1698, under the Earl of Bellamont's governorship, the assembly voted an indemnity to L.'s heirs. His and Milborne's bones were then disinterred and honorably buried in the Dutch church then in Garden st., New York. —In 1689 L. bought for the Huguenots the present site of New Rochelle, N. Y.

LEISTER, or LISTER, n. list'er [Gael. leasdair, light, lustre]: in Scot., a spear armed with three or more prongs for striking fish. Note.—The method employed by poachers by night is first to attract the fish to the surface of the water by lighted torches, and then to drive the leister through them: comp. laxter, a salmon-fisher—from Scot. lax; Ger. lachs, a salmon.

LEISURE, n. lē'zhûr [F. loisir, leisure time—from OF. leiser, leisure, originally signifying 'to be permitted'—from L. licērĕ, to be permitted: OF. loist, it is allowed—from L. licet, it is permitted]: freedom from occupation, business, or hurry; eonvenience of time: Add. free from employment or hurry; not occupied or engaged. Leisurely, a. -lǐ, done at leisure; slow: Add. not in haste or hurry; slowly. Leisured, a. -zhûrd, having leisure. At leisure, free from occupation; not busy; at a convenient time.

LEITH, *lēth*: important seaport, municipal and parliamentary burgh of Scotland, on the s. shore of the Firth of Forth, at the mouth of the Water of Leith, two m. n. of Edinburgh, with which it is now connected by a continuous line of houses. Although not without many fine edifices, the town, as a whole, appears irregular and dingy, especially in the older and central parts. The Trinity-house, Custom-house, Town-hall, Royal

Exchange, Corn Exchange, and banks are handsome buildings. L. has one of the largest and most elegant flour-mills in the kingdom. W. of the town, on the shore, is Leith Fort, an artillery station. L. is connected by branch lines with the various railways centring in Edinburgh. The harbor extends, by means of two piers, more than a mile into the Firth, and has a depth of 20 to 25 ft. at high water. There are four wet-docks, the newest, the Edinburgh dock, begun 1874, was opened 1881. It has a quay frontage of 6,775 ft., is 1,500 ft. long, 650 ft. wide, and cost in all £400,000. Railway communication is continued from the various Leith stations throughout the quays and across the harbor. There are six graving-docks, one of them being 73 ft. wide and 450 ft. long, with 24 feet of water at spring tides. The trade of the port is chiefly in colonial and foreign produce, but is extensive also in coal and iron exports. Grain, timber, esparto grass, and wine are among the leading imports. In 1840 the harbor dues were £26,000; in 1880 upwards of £88,000. In 1852, the tonnage of arrivals was 350,286; in 1880 it was 952,580; the sailings show corresponding increase. There is regular communication with London, New York, n. Scotland, Norway, and the continent. In 1880, the imports of grain amounted to 3,383,091 cwts., and those of flour to 795,460 sacks. The fishing village of New Haven is close by. There is a daily market. Chief manufactures - ship-building, machinery, sailcloth, ropes, ale, rectified spirits, soap, bottles, flour. Pop. (1890) 78,538; (1901) 76,667.

LEITHA, lī'tā: Austrian stream rising at Haderswerth in Lower Austria, and flowing n.e. nearly along the frontier of Lower Austria and Hungary, emptying into the Raab, which joins the Danube. Since the reorganization of the empire 1867, it has become usual to speak of Hungary and the lands belonging to the Hungarian crown as Trans-leithan, and the rest of the empire as Cis-leithan—thus giving the stream a factitious importance.

LEITMERITZ, līt'mēr-īts, or LITOMIERCZICZE: old walled town of Bohemia, on the right bank of the Elbe, 34 m. n.n.w. from Prague. One of the churches has a tower like a cup, a curious memorial of the fierce religious contest in the 15th c. as to the use of the cup by the laity in the Lord's Supper. Much of the Bohemian glass is polished in L., and it has trade in corn and wine. Pop. (1880) 10,854; (1890) 11,342.

LEITOMISCHL, lī'tō-mīsh'l: town of Bohemia, 84 m.

e.s.e. from Prague. Pop. 7,500.

LEITRIM, le'trim: county in the n.e. of the province of Connaught, Ireland; 613 sq. m., or 392,363 acres, of which 249,350 are arable. The surface of L. is irregular. It is divided into two parts by a considerable lake called Lough Allen. The s. division is broken by low parrow ridges, which inclose numerous small lakes, the

chief of which is Lough Rinn. The more level portion of this division of the county forms part of the great limestone plain of Ireland, and contains some excellent arable and pasture land. The n. division is much more irregular in surface, being intersected by several ridges of considerable elevation. To the n. of Lough Allen the soil, except at rare intervals, is unfavorable for agriculture, and the climate is damp and ungenial. principal crops are potatoes, oats, and hay; but, on the whole, the condition of the agriculture, considering the many inventions and improvements recently made, is not forward, the total number of acres under crops of all kinds having been (1880) 81,530. L., however, is more a grazing than a tillage district. Large numbers of horned cattle are raised in the s. division. The total number of cattle (1880) was 84,142; of sheep, 10,756.

Turf is abundant in all parts of the county.

The river Shannon (q.v.) enters this county near its source in Cavan, and traversing Lough Allen, passes out at the s. extremity of Leitrim. Other rivers are the Bonnet, the Yellow river, and the Daff. The only towns of any note are Carrick-on-Shannon, Manor-Hamilton, and Mohill. The n. division of the county is more rich in minerals than most districts of Ireland. Coal is found in the Lough Allen basin, the chief work. ing beds being in the Slieve-an-Ierin Mts., where it is raised for smelting purposes. In the same district is found iron, the ore of the Arigna mines yielding as much as 58.2 per cent. of metal. Lead ore also is abundant, though the mining operations have been discon-The occupation of the people being chiefly agricultural, there are scarcely any manufactures. Pop. (1881) 89,795; of which 81,054 were Rom. Catholics, 7,619 Protestants of the Episc. Church, and the rest Protestants of other denominations. (1891) 78,379.

L. anciently formed part of the territory of Breifne O'Rourk. It was reduced to the English submission in the reign of Elizabeth, but revolted 1588, submitting once more 1603, when the O'Rourk accepted a patent of the residue of his estate. The confiscations which followed the great civil war may be said to have extinguished the native proprietary and the family of O'Rourk.

LELAND, le'land, Charles Godfrey: author: b. Philadelphia, 1824, Aug. 15. He graduated at the College of New Jersey 1846; spent two years studying history, philosophy, æsthetics, and modern languages in Heidelberg, Munich, and Paris; was admitted to the bar in Philadelphia 1851; applied himself to literature, and contributed to the leading magazines of the day. In journalism he was connected with the Evening Bulletin and the Press of Philadelphia a number of years. He resided in London 1869–80, and after spending some time in establishing a system of industrial-art education in

LELAND-LELAND STANFORD JR. UNIVERSITY.

the Philadelphia public schools and editing a series of Art-Work Manuals (1885), he resumed his London residence. His Hans Breitmann's Ballads (5 parts, 1867-70), gave him wide repute as a writer of dialect poetry. His numerous publications include Egyptian Sketch-Book (1873); The English Gypsies and their Language (1873); Pidgin-English Sing-Song (1876); The Minor Arts (1880); The Gypsies (1882); and The Algonquin Legends of New England (1884). He died 1903, Mar. 20.

LELAND, John: 1754, May 14—1841, Jan. 14; b. Grafton, Mass.: Bapt. minister. He was educated for the Congl. ministry, but became a Bapt., and was licensed to preach 1774 and ordained 1787. During 1775–91 he travelled through Va., N. C., Md., and s. Penn., preached more than 3,000 sermons, founded two churches, and baptized 700 persons. With James Madison he was a candidate for delegate to the state convention to adopt the federal constitution, and withdrew in Madison's favor. In 1792 he removed to Cheshire, Mass., and continued his itinerant preaching, baptizing 1,352 persons 1792–1821. He was a democrat in politics, eccentric in manner and speech, and aggressive in action; presented Pres. Jefferson a 1,450-lb. cheese on behalf of the people of Cheshire; and prepared his Occasional Sermons and Addresses, with essays and autobiography 1819 (published by his grand-daughter, Miss L. F. Greene, 1845).

LELAND, lel'and, John, D.D.: English apologist for Christianity: 1691-1766; b. Wigan, Lancashire. He became a Presb. minister in Dublin 1716, and appeared as an author 1733, in a reply to Tindal's deistical work, Christianity as Old as the Creation. In 1737, appeared another apology, The Divine Authority of the Old and New Testament asserted against the Unjust Aspersions and False Reasonings of a Book entitled 'The Moral Philosopher.' For the learning and the abilities evinced in these works, the Univ. of Aberdeen conferred on L. the degree D.D. His best work is A View of the Principal Deistical Writers that have appeared in England. Though L. was a controversialist, he was always fair and charitable.

LELAND STANFORD JUNIOR UNIVERSITY: co-educational institution of learning, at Palo Alto, Cal.; founded and endowed by Leland Stanford and Jane Lathrop Stanford in commemoration of their only son. The university was opened 1891. The general management of the institution is vested in a board of 24 trustees, of whom 15 constitute a quorum. The council, consisting of the pres., profs., and assoc. profs., determines the requirements for admission and for the various degrees, the recommendation of candidates for graduation, and the selection of fellows. The degree bachelor of arts is led to by the general courses; technical courses lead to the degrees of mechanical engineering and civil engineering; no honorary degrees are given. The income from the

- 50

endowment property, worth about \$9,000,000, is about \$200,000, and by the will of Mr. Stanford, who died 1893, June 20, the univ. received \$2,500,000, which bequest became available 1896. At the death of Mrs. Stanford the whole estate will go to the university, raising the endow-

ment to about \$40,000,000.

The univ. is on the Palo Alto estate, Santa Clara valley, 33 m. s.e. of San Francisco, on the coast division of the Southern Pacific r.r. The estate consists of 8,400 acres. The central group of buildings will constitute two quadrangles, one surrounding the other. The inner quadrangle is completed. The architectural motif is found in the old Spanish missions of California. The main entrance consists of a memorial arch 80 ft. wide, 85 ft. high, and having an open span of 46 ft. The idea of the university, in the words of its founders, 'came directly and largely from our son and only child, Leland; and in the belief that had he been spared to advise as to the disposition of our estate, he would have desired the devotion of a large portion thereof to this purpose, we will that for all time to come the institution hereby founded shall bear his name.' The object of the university is 'to qualify students for personal success and direct usefulness in life,' and its purposes 'to promote the public welfare by exercising an influence in behalf of humanity and civilization, teaching the blessings of liberty regulated by law, and inculcating love and reverence for the great principles of government as derived from the inalienable rights of man to life, liberty, and the pursuit of happiness.'

In the government of the univ. the largest liberty consistent with good work and good order is allowed. Failure to show 'respect for order, morality, personal honor,' etc., is sufficient cause for removal. Religious instruction is given in accordance with the provision of the charter, which prohibits sectarian instruction, but requires the teaching of the 'immortality of the soul, the existence of an all-wise and benevolent Creator, and that obedience to His laws is the highest duty of man.' The library, which now numbers over 45,000 vols., has a shelving capacity of 75,000, and a reading-room that accommodates 125 students. The campus embraces 100 acres.—In 1902 there were 130 profs. and assistants, and 1,325 students.

Pres., David Starr Jordan, LL.D.

LELY, le'li, Sir Peter (Peter van der Faes): 1617-80; b. Soest, Westphalia; son of one Van der Faes, capt. of a regt. of infantry, who was generally called Le Capitaine du Lys, or Lely, from having been born at the Hague, in a house the front of which was decorated with a fleur-de-lis. L. studied painting at Haarlem two years. He began as a painter of landscapes and subjects from history; but his talent was for portrait-painting, and soon after the death of Van Dyck, he settled in London. He was employed successively by Charles I., Cromwell, and Charles II., who nominated him court-painter, and conferred on him knighthood. He had great facility of execution, and his style, though deficient in all higher

LEMAN--LEMMING.

qualities of art, was well suited for his position as the favorite portrait-painter of such a court as that of his chief patron. There is a large collection of his portraits at Hampton Court, known as the Beauties of the Court of Charles II. He died in London.

LEMAN, n. $l\bar{e}'m\breve{a}n$ [AS. leof, beloved, dear; mann, one of the human kind: comp. Gael. lean, to follow]: in OE., a sweetheart; a gallant; a mistress.

LE'MAN, LAKE: see GENEVA, LAKE OF.

LE MANS': see MANS, LE.

LEMBERG, lĕm'bĕrċh (formerly Löwenburg; Polish 'Llwów'): capital of the Austrian kingdom of Galicia and Lodomeria, on a small stream called the Peltew, in a narrow basin among hills. L. is the seat of a Rom. Cath., a Greek United, and an Armenian abp., and has 30 churches and a dozen monasteries. Several of the churches are fine buildings; also the town-hall, the theatre, the hospital, and the technical academy. The university, founded 1784, re-established 1817, has about 50 professors and 800 students: its library contains 66,000 vols., 470 mss., and a collection of 10,000 coins. also is the seat of the institute founded by Ossolinski, with a library of 100,000 vols. and 1,700 Mss., chiefly of Polish literature. The trade of L. is extensive, and there are manufactures of paper, machines, matches, candles, naphtha, liqueurs, and beer. There is a citadel here. L., founded 1255, was long an important Polish city. It fell to Austria at the final partition of Poland. Pop. of L. with its six suburbs (1880) 109,746, of whom about 30,000 are Jews; (1890) 127,943; (1900) 159,877.

LEMMA, n. lĕm'mă [Gr. lemma, anything received—from lam'bănō, I take or assume]: in math., a preparatory proposition; an assumption; set forth to render more perspicuous the demonstration of a theorem or construction of a problem; in logic, a premise taken for granted.

LEMMING, n. lem'ing [a Dan. and Norw. word], (Lemmus or Myodes): genus of rodent quadrupeds, of family Muridæ, and sub-family Arvicolidæ, nearly allied to



Lemming (Lemmus norvegicus).

voles, but differing from them in the extreme shortness of the ears and tail, and in having larger and stronger

LEMNIAN EARTH—LEMNOS.

claws, more adapted for digging. They are also more heavily formed. The most noted species is the Seandinavian L. (L. or M. norvegicus), about five inches long, with variegated black and tawny fur, inhabitants of the n. Scandinavian mountains, where it ordinarily feeds on reindeer-moss and other lichens, grass, catkins of birch, etc. But, breeding twice or more in the course of a year, and producing four or five at a birth, it multiplies so much, that, periodically, vast troops leave their native regions, migrating either toward the Atlantic Ocean, or the Gulf of Bothnia. They proceed persistently in a straight line, swimming rivers, crossing mountains, and devouring every green thing in their course. They move chiefly in the night or early morning. Bears, wolves, foxes, lynxes, hawks, and owls follow and prey upon them, and most of the survivors finally drown themselves in the sea, into which they plunge, striving to swim onward in the same direction. In times of prevalent superstition, immings were often exorcised by the priests, and the peasantry of Norway supposed them to fall from the clouds.

LEMNIAN EARTH, lĕm'nǐ-ăn erth: mineral found in the island of Leinnos; massive, chalk-like, soft, yellowish gray, or whitish, and falling to powder in water. It consists of about 66 per cent. silica, with 14 of alumina, and a little oxide of iron, soda, and water. From very early antiquity, it had great and undeserved reputation in medicine, and being sold in little pieces, each stamped with a particular stamp, it acquired the name of Terra Sigillata (Sealed Earth). The stamp in ancient times, Galen says, was the head of Diana, tutelary goddess of Lemnos; but is now only the Turkish name of the mineral. The ancients had more than one legend respecting the discovery of its virtues. Lemnian earth, ochre of a deep-red color and firm consistence, used as a pigment—found in conjunction with Lemnian earth.

LEMNISCATA, n. $l \not\in m' n \not\mid s - k \bar{a}' t \not\mid a$, or Lemnis'cate, n. $-k \bar{a}t$ [L. $lemnisc\bar{a}tus$, adorned with a pendent ribbon]: in geom., a curve of the fourth order having the form of the figure 8.

LEMNOS, lem'nos (called also Stalimne): island belonging to Turkey, in the n. part of the Archipelago, about 40 m. w. of the entrance to the Dardanelles. It is irregular in shape, and nearly divided into two islands, by two deep bays—Port Paradise on the n. and Port St. Antony on the s.; 173 sq. m. The women are famed for beauty. It is hilly, rather bare of wood, and bears unmistakable traces of volcanic action at an early period, which fact probably originated the ancient myth of Vulcan lighting on this island when Jupiter hurled him from heaven. Moschylos, a volcano, no longer active, was believed to be the workshop and favorite residence of this deity. The principal product of L. is the Lemnan Earth (q.v.), used in ancient times as a cure for

LE MOINE-LEMON.

wounds and serpent-bites, and still highly valued by both Turks and Greeks. The chief town, Kastron (on the site of the ancient *Myrina*), has pop. 5,000; it furnishes excellent sailors. Pop. of island about 29,000.

LE MOINE': see LEMOYNE.

LEMON, n. lěm'ŏn [F. and Sp. limon—from It. limone; Ar. laymun, a lemon]: acid fruit of a tree, Citrus lǐmōnum, ord. Aurantiācēæ. The tree has by many botanists been regarded as a variety of the Citron (q.v.), and, like it, is a native of n. India. Its leaves are ovate or oblong, usually serrulate, pale green, with a winged stalk; the flowers are streaked and reddish on the outside; the fruit is oblong, wrinkled or furrowed, pale yellow, with generally concave oil-cysts in the rind. In the common



Lemon (Citrus Limonum).

variety, very extensively cultivated in many tropical and sub-tropical countries, the pulp of the fruit is very acid, abounding in citric acid. There is, however, a variety called the Sweet L., occasionally cultivated in s. Europe, whose juice is sweet. It is Citrus Lumia of some botanists, and has both concave and convex oil-cysts in the rind. The acid juice of the common L. is used in the preparation of Lemonade, and is administered in various forms in febrile and scorbutic complaints. It is much used by calico-printers to discharge colors, to produce greater clearness in the white part of patterns, dyed with dyes containing iron. As a preventive of sea-scurvy, it is an important article of sea-stores. Citric acid and lemon-juice are likewise made from it in great quantities. The rind of the fruit (Lemon-peel), separated from the pulp, and kept in a dried state, is a grateful stomachic, and is used for flavoring. The produce of the lemon-

LEMON-LEMON-JUICE.

groves of Italy, the Tyrol, Spain, Portugal, s. Francé, and other countries bordering on the Mediterranean Sea, is largely exported to more northern regions. Sicily alone exports annually 30,000 chests, each containing 440 lemons. In recent years, L.-culture has gained great proportions in Cal. with important effects on the trade from Mediterranean ports to the United States. The L.-tree is very fruitful; it is more delicate than the orange.—The L. is supposed to have been introduced into Europe during the Crusades. It is almost naturalized in some parts of s. Brazil, that the flesh of the cattle which pasture in the woods acquires a strong smell of lemons, from their eating fallen fruit.

LEMON, lem'on, Mark: 1809, Nov. 30—1870, May 23; b. London: author. Early in life he became a successful writer for the stage; in 1841 joined a party of authors in establishing the comic weekly Punch; was its assistant editor two years, and its editor 1843 till his death; was for many years literary editor of the Illustrated London News; and assisted Charles Dickens in managing Household Words. He was author of more than 60 dramatic pieces, among which are The Ladies' Club, The School for Tigers, and What Will the World Say? and of about 100 songs, many of large though transient popularity. In 1862 he delivered a successful course of lectures on About London, subsequently published under the title The Streets of London; and the winter before his death a second series combined with dramatic readings.

LEMONADE' [Fr. limonade]: beverage, formed best by adding two lemons sliced, and two ounces of white sugar, to a quart of boiling water, and digesting till cold. It is useful as a refrigerant in febrile and inflammatory complaints, and hemorrhage, in which cases it should be given iced.

LEMON-GRASS (Andropogon scænanthus): beautiful perennial grass, three or four ft. high, with panicle mostly leaning to one side. It is a native of India, Arabia, etc., and is extremely abundant in many places. It has a strong lemon-like fragrance, oppressive where the grass abounds. It is too coarse to be eaten by cattle except when young, and is therefore often burned down. Europeans in India make an agreeable stomachic and tonic tea of the fresh leaves. By distillation, an essential oil is obtained (Lemon-grass Oil), used externally as a stimulant in rheumatic affections; it is yellow, with a strong lemon-like smell. This oil is used in perfumery, and is often called Oil of Verbena by perfumers. L. has been introduced into the W. Indies, Australia, etc. See also Grass Oil.

LEMON-JUICE, in Medicine: somewhat opaque, very sour liquid, obtained from lemons by expression and straining. Its acidity is due to the presence of citric and a little malic acid. Its principal uses in medicine

LEMONS-LE MOYNE.

are the following: 1. as an anti-scorbutic. Its importance for this use can be fully appreciated only by those familiar with naval history. Its active principle, citric acid, is now frequently substituted for it. 2. In rheumatism.—Dr. G. O. Rees, who first employed it in this discase, 'considers the citric acid to undergo changes in the stomach, and to supply oxygen to such elements as tend to produce uric acid, and thereby to induce the formation of urea and carbonic acid instead. ' 3. In the formation of effervescing draughts.—A scruple of bicarbonate of potash in solution, mixed with about three drachms and a half of lemon-juice, producing citrate of potash, forms an excellent effervescent draught; it acts as a mild diaphoretic and diuretic, tends to allay febrile disturbance, and serves to check nausea and vomiting. If the object is specially to determine to the skin, a draught composed of a scruple of sesquicarbonate of ammonia in solution, with six drachms of lemon-juice, so as to form a citrate of ammonia, is preferable. Effervescing draughts are often employed as agreeable vehicles for the exhibition of other remedies.

LEMONS, OIL OF, OF ESSENCE OF: extracted from the minute cells visible on the rind of the lemon, by submitting raspings of the fruit to pressure in hair sacs. It may be obtained also by distilling the peel with water; but its flavor, obtained in this way, is less agreeable, though the oil itself is purer, owing to the absence of mucilaginous matter. The distilled oil is sold under the name scouring-drops, for removing grease-spots from silks and other fabrics. Pure oil of lemons is composed mainly of a hydrocarbon, citren or citronyl, C₁₀H₁₆, which is consequently isometric with oil of turpentine, with which it is often adulterated. It is used principally for communicating agreeable odor to other medicines, though it is sometimes taken in the dose of two or three drops on sugar as a carminative. From its agreeable scent, it is often added to evaporating lotions and to ointments.

LEMONS, SALT OF: name commonly but improperly applied by druggists to binoxalate of potash mixed with a little of the quadroxalate; employed in removing ink spots. This mixture occurs in the Oxalis acetocella, and hence has been designated Salt of Sorrel. It is liable to

be poisonous in the stomach.

LE MOYNE (or Le Moine), leh mwan', Antoine, Sieur de Châteauguay: 1683, July 7—1747, March 21; b. Montreal: soldier. He became an officer in the French army; settled a colony in La. 1704; served against the English 1705-6; was appointed commander of French troops in La: 1717 and royal lieut. 1718; aided in capturing Pensacola from the Spaniards; surrendered it 1718 and was held prisoner till 1720; commanded at Mobile 1720-26; became gov. of Martinique 1727, Cayenne, and Cape Breton 1745; and successfully defended Louisburg against Pepperol's New England troops. His father,

Charles L. M., Sieur de Longueuil, 1626–1683, b. Dieppe, went to Canada 1641, settled among the Huron Indians at Villemarie, obtained extensive land-grants, distinguished himself in wars against the Iroquois 1648–51 and 55, was enobled for his services with the Tracy and Courcelles expeditions 1668, and became lieut. commander at Montreal.—Antoine's brother, Charles L.M., first Baron de Longueuil, 1656, Dec. 10—1729, June 8, b. Villemarie, Canada, served with the French army in Flanders, returned to Canada and was made mayor of Montreal 1683, colonized his estates, commanded a div. of militia in the Iroquois campaign, 1687, was wounded in the repulse of Sir William Phipps' assault on Quebec 1690, became gov. of Montreal and baron 1700, commandant-gen. of the colony 1711, gov. of Three Rivers 1720, and again gov. of Montreal 1724.

LE MOYNÉ (or Le Moine'), Joseph, Sieur de Sérigny: naval officer: 1668, July 22—1734; b. Villemarie, Canada: 6th son of the 1st Charles L. M. He was educated for the French navy; commanded the squadron that coöperated with the land force under his brother, Iberville, in the Hudson Bay campaign; took a colony to La.; surveyed the coast 1718; participated in the capture of Pensacola 1719, May 14; repulsed the Spaniards at Dauphin Island, Mobile Bay, after a month's siege 1719, Aug. 19; returned to France 1720; and was promoted capt. of the line 1720, and rear-admiral and gov. of Rochefort 1723.

LE MOYNE' (or LE Moine), Pierre: see Iberville.

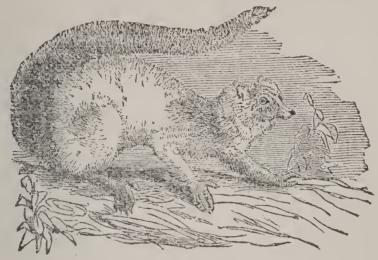
LEMPA, lĕm'pâ, RIVER: in San Salvador, Central America outlet of Lake Guijar; largest river on the Central American Pacific coast. Rising in Guatemala it flows e.s.e. through a volcanic range, forming in part the boundary between San Salvador and Honduras, and emptying into the Pacific at San Maria; 210 m. in length. It has a wide and fertile valley, parts of which are liable to sudden floods by the rising of the river sometimes 35 ft. It is navigable, though a bar obstructs the mouth.

LEMPRIERE, *lĕm-prēr'*, John, d.d.: abt. 1760–1824, Feb. 1; b. Island of Jersey. He was educated at Westminster School and Pembroke College, Oxford. L.'s *Classical Dictionary* (Bibliotheea Classica, 1788) was for many years the standard work of reference in England and the United States on all matters of ancient mythology, biography, and geography. To elderly scholars the name brings memories, but the book itself was superseded a generation since.

LEMUR, n. lē'mėr [L. lĕmŭrēs, ghosts of the departed, from its rapid noiseless movements]: genus of mammalia which gives its name to the family Lemuridæ, a family allied to monkeys, and like them, quadrumanous, having on each of the four extremities a well developed thumb opposed to the fingers, but in other respects approaching the ordinary quadrupedal type. The general form is

LEMURES-LEMURIA.

slender and elongated, the muzzle pointed, the eyes large, the ears very small, the hind limbs longer and larger than the fore limbs. The molar teeth are furnished with pointed tubercles fitting into each other, as in *Insectivora*, and the whole dentition of many of the family is



Lemur.

adapted to animal rather than vegetable food. All the Lemuridæ are natives of warm parts of the old world, and live chiefly in forests, most of them climbing trees with the agility of monkeys. They are graceful and beautiful creatures, and generally gentle and easily tamed; but they have neither the prying and mischievous dispositions, nor the intelligence of monkeys. All the species of the genus L., as now restricted, are natives of Madagascar. They are gregarious and their food consists partly of fruits. The names Maki and Macauco are given to some of them, and sometimes extended to all. The largest species is about the size of a large cat.—To the L. family belong also the Loris, Indris, Galagos, and Tarsiers.

LEMURES, n. plu. lem'ū-rēz [see Lemur]: evil spirits; hobgoblins. L. was the general designation given by the Romans to all spirits of departed persons, of whom the good were honored as Lares (see Lar), and the bad (Larvæ) were feared, as ghosts or spectres still are by the superstitious, being said to wander about during the night, seeking opportunity of inflicting injury on the living. The festival called Lemuria, May 9, 11, 13, was accompanied with ceremonies of washing hands, throwing black beans over the head, etc., and the pronunciation nine times of these words: 'Begone, you spectres of the house!' which deprived the L. of their power to harm. Ovid describes the Lemuria in the 5th book of his Fusti.

LEMURIA, lē-mū'rĭ-a [from L. lemur, spectre; scientific name for a genus of mammals common in Madagasear]: the lost continent, which figures itself in the imagination of some men of science as having existed in a remote geologic age, and as lying now beneath the Indian Ocean. While there is some geological evidence

LENA-L'ENFANT.

which seems to indicate some former large extent of land now submerged, the ehief evidence for it is its offer of an easy solution to some perplexing ethnological problems; e.g., the Negroid races in Africa as now found are not readily accounted for—on any theory, evolutionary or otherwise, of the descent of the whole human race from one pair of progenitors—without the hypothesis of a large extent of land between the e. eoast of Africa and the s. coast of Asia. If the supposed land were not continental, it may have been a chain of large islands. Such a theory as that of L. cannot be either denied or affirmed with positiveness by our present knowledge. It remains an interesting hypothesis.

LENA, $l\bar{e}'na$, Rus. $l\bar{a}$ - $n\hat{a}'$: important river of E. Siberia. It rises amid the mountains on the n.w. shore of Lake Baikal, in the govt. of Irkutsk; flows first n.e. to the town of Jakutsk, then n. to the Arctic Ocean, into which it passes through several mouths. Its length is 3,000 m.; its chief affluents are the Vilui on the left, and the Vitim, the Olekma, and the Aldan on the right. Navigation is open from May till November. During spring, the waters of the river regularly overflow their banks. Near the town of Jakutsk, the breadth of the river is $6\frac{1}{2}$ m. L. is the principal artery of the trade of E. Siberia. Russian and Chinese goods, as well as Siberian furs, furnished by the natives, are exported from this river. The chief harbors on the river are Olekminsk, Jakutsk, and Kachugsk.

LEN'APES: see DELAWARE INDIANS.

L'ENCLOS', NINON DE: see NINON DE L'ENCLOS.

LENCZIZA, *lĕn-chĭz'a*: ancient Polish town, govt. of Kalisz, about 90 m. w.s.w. of the city of Warsaw. It contains the ruins of a castle of Kazimir II., erected 1180. Linen and woolen cloths and soap are manufactured. Pop. (1880) 15,550, half of whom are Germans and Jews.

LEND, v. lĕnd [AS. lænan, to lend, to grant: Dut. leenen; Icel. lána, to lend: Goth. leihvan; Ger. lehen, to lend money at interest; lehnen, to loan or lend]: to grant to another for a temporary use; to grant or furnish in general. Lend'ing, imp.: N. in OE., act of one who lends; the thing lent. Lent, pt. and pp. lĕnt, did lend. Lend'er, n. -ėr, one who lends; one who makes it his business to put out money to interest.

LENDINGS, n. plu. *lĕnd'ingz* [Ger. *lenden;* AS. *lendenu*, loins]: in *OE*., probably a garment or cloth about the loins. LENDERS, n. plu. *lĕnd'erz*, same sense in Chaueer.

L'ENFANT, long-fong, Pierre Charles: 1755-1825, June 14; b. France: engineer. He accompanied Lafayette to America 1777 and entered the continental army; became capt. of engineers 1778, Feb. 18; was wounded and left for dead at the siege of Savannah; promoted maj. 1783, May 2; engineer of Fort Mifflin 1794; drew

LENGTH-LENNEP.

the plans for the city of Washington, and was architect of several of its public buildings; and declined appointment as prof. of engineering at the U.S. Military Acad. 1812.

LENGTH, n. lěngth [AS. lengdth, length—from leng, more, longer: Dut. lengte, length: Icel. lengd: see Long]: the measure of anything from end to end; the longest line through a body; extent either of space or time; duration; extent; distance. Lengthy, a. lěngth'i, moderately long; not short. Length'iness, -něs, state of being lengthy. Length'ily, ad. -li. Length'ways, or Length'wise, ad. -wīz, in the direction of the length. At length, at last; in conclusion. Lengthen, v. lěngth'n, to make longer; to draw out; to extend; to grow longer. Length'ening, imp. -n-ing: Adj. increasing in length; becoming longer: N. a continuation. Lengthened, pp. lěngth'nd.

LENIENT, a. lē'nī-ĕnt [L. leniens or lenĭen'tem, rendering soft or gentle, moderating—from lenis, soft, mild: It. leniente, softening]: softening; mitigating; not severe; mild, as a sentence. Le'niently, ad. -lī. Le'niency, n. -ĕn-sī, state of being lenient; clemency. Lenity, n. lĕn'ĭ-tǐ [L. lenĭtātem, softness, mildness]: mildness of temper or treatment; clemency; gentleness. Len'itive, a. -ĭ-tǐv, having the power of softening or mitigating: N. a medicine or application which eases pain; a palliative.—Syn. of 'lenity:' kindness; mercy; softness; tenderness; humanity.

LENKORAN, *lĕn-ko-rân'*: Russian seaport on the Caspian Sea, and a dist. town in the govt. of Baku, in the Caucasus, lat. 38° 46′. It has great importance for the trade between Russia and Persia; but a defective harbor, and the vicinity of warlike tribes, have hitherto rendered its natural advantages of little avail. Pop. (1880) 5,320.

LENNEP, lĕn'nĕp: a town of Rhenish Prussia, 22 m. e.s.e of Düsseldorf. It has woolen and cotton manufactures. Pop. (1880) 8,077; (1890) 10,427.

LENNEP, lĕn'ep, DAVID JACOB VAN: 1774, July 15—1853, Feb. 10; b. Amsterdam; of the same family as Jan Daniel van L. He was a philologist and poet, and became prof. of rhetoric at Leyden. His principal writings are Carmina Juvenilia (Amst. 1791), Exercitationes Juris (Leyd. 1796), valuable annotated editions of some of the classic authors, and a metrical Dutch translation of the Works and Days of Hesiod (Amst. 1823).

LEN'NEP, JACOB VAN: called by his countrymen, the 'Walter Scott of Holland:' 1802, Mar. 25—1868, Aug. 25; b. Amsterdam; son of David Jacob van L. Educated for the law, he passed as a barrister, and soon achieved great reputation. Yet more than 30 years he cultivated literature with untiring assiduity, and, considering the drudgery of his professional work, with astonishing success. L. appeared as an author shortly before 1830, in

LENNEP-LENORMANT.

Vdaerlandsche Legenden (National Legends). Since then, his most popular works have been the comedies, Het Dorp aan die Grenzen (The Frontier Village, 1830), Het Dorp over die Grenzen (The Village over the Frontier, 1830), and the novels, Onze Voorouders (Our Forefathers), De Roos van Dekama (The Rose of Dekama, 1837—English by Woodley 1847), and De Pleegzoon (The Adopted Son—English by Hoskins, New York 1847). L., who had a remarkable knowledge of English language and literature, translated into Dutch some of Shakspeare's finest plays, and of Byron, Southey, and Tennyson's poems. A complete ed. of his dramatic works, tragedies, comedies, and operas, appeared at Amsterdam 1852–55. He was engaged several years on an edition of the great Dutch poet Vondel.

LEN'NEP, JAN DANIEL VAN: 1724-71; b. Leeuwarden, province of Friesland: Dutch philologist. He studied at Francker and Leyden. In 1752, he was appointed prof. of ancient languages at Groningen, and 15 years afterward at Francker.

LEN'NOX: old name for DUNBARTONSHIRE (q.v.).

LEN'NOX, Earls and Dukes of: see STUART, FAMILY OF.

LENNOXTOWN, len'oks-town: village of Stirlingshire, Scotland, in a picturesque district on Glazert Water, on the Campsie and Blane Valley railway, 11 m. n.n.e. of Glasgow. Its inhabitants are employed chiefly in the print-works and alum-works in the immediate neighborhood. Pop. (1881) 3,249; (1891) 2,838.

LENO, n. $l\bar{e}'n\bar{o}$ [It. leno, supple, pliant—from L. $l\bar{e}nis$, soft]: a kind of cotton gauze figured and bordered, used for short and long window-curtains.

LENOCINIUM, lē-nō-sǐn'ī-ŭm: term borrowed from the canon law, and used in English, but more frequently in Scotch law to denote a husband's connivance in his wife's adultery. The wife can set up such defense to a suit for divorce, on the ground of her adultery so procured.

LENORMANT, lėh-nor-mŏng', François: French archæologist: 1837, Jan. 17-1883, Dec. 9: b. Paris.He studied under his father, and at an early age engaged in numismatic and archæological researches. He took the numismatic prize of the Acad. of Inscriptions 1857, and made tours in the interest of his science in Germany, Italy, Greece, Turkey, and Egypt. His letters to the Paris newspapers giving an account of the massacres of the Christians in Syria, 1860, which occurred while he was there, were republished in June Persécution du Christianisme en 1860; les derniers Événements de Syria. The same year he made excavations at Eleusis; 1874 was ap pointed prof. of archeology in the Bibliothèque Nationale; during the siege of Paris he served as volunteer on the national guard, and was wounded at Buzenval. In 1878,

LENOX-LENOX LIBRARY.

he attended the congress of orientalists at Florence. Besides being editor of the Moniteur des Architectes, 1869-72, and founding, with M. de Witte, the Gazette Archéolo-gique, he has contributed largely to French and other antiquarian journals; and is author of numerous archæological and other works, among the most important being Histoire des Peuples Orientaux et de l'Inde; Lettres Assyriologiques et Épigraphiques (2 vols); Manuel d'Histoire Ancienne de l'Orient; Etudes Accadiennes; Les Premières Civilizations; La Magie chez les Assyriens, etc. Histoire Ancienne de l'Orient (9th ed. Paris 1881, 3 vols.), L.'s greatest work, has been translated into English and published (London and Phila. 2 vols. 1869,70) as Manual of the Ancient History of the East. Most adapted for popular English and American use is Beginnings of History (N. Y. 1882, vol. i.), translated from Les Origines de l'Histoire d'Après la Bible (2d ed. vol. i., Paris 1880; vol. ii., 1882,84, has since appeared). His greatest critical work, and one whose value to paleography can scarcely be over-stated, is La Propagation de l'Alphabet Phénicien dans l'Ancien Monde (vol. i., 2d ed. Paris 1875).—L. writes without bias, using entire intellectual liberty, still occupying an unmistakable attitude of Christian faith.

LENOX, len'oks: town in Berkshire co., Mass., among the beautiful Berkshire hills; on the Housatonic river and Housatonic railroad, 33 m. s.e. of Albany, 110 m. w. of Boston, 125 m. n. by. e. of New York. It has several churches and public schools, incorporated acad., public library, national bank (cap. \$50,000), and manufactures of plate-glass, iron, lumber, lime, bricks, and flour. It abounds in iron ore, limestone, and an excellent quality of marble, which has been used largely in constructing several of the public buildings in Washington. L. was settled 1750, incorporated 1767, and given the family name of the Duke of Richmond. Its scenery is attractive with a quiet beauty, and the town has long been popular as a place of summer homes for families from the great cities. Pop. (1890) 2,889; (1900) 2,492.

LEN'OX LIBRARY: in New York, founded 1870 by James Lenox (1800, Aug. 19—1880, Feb. 17, son of Robert Lenox, a wealthy Scotch merchant); it was opened 1877. The founder graduated at Columbia College, was admitted to the bar, and became his father's partner. On the death of the father (1839) the son inherited an estate of 30 acres between 4th and 5th avenues, and several millions of dollars. He then withdrew from business, and passed the remainder of his life in collecting rare books and manuscripts, paintings, statuary, and works of art. In 1870 he deeded his collections, valued at \$1,000,000, to trustees for the benefit of the public, and erected for their preservation a building on 5th avenue, between 70th and 71st sts., which also was deeded to trustees. The building is 3 stories high in the centre

and 2 above the basement on the wings; has frontage 200 ft., and depth 114 ft., with walls of Lockport lime-stone, stairs of stone, and shelves of iron. There are 4 large reading-rooms and spacious separate galleries for paintings and sculptures. The building cost \$450,000, and the ground was worth as much more, making the total value of the gift nearly \$2,000,000. A surviving sister bequeathed the library 22 adjoining building lots and \$100,000 for books. The library has no accommodations for the reading public, and is really an unequaled literary and art museum. George Henry Moore, LL.D., became a trustee and the supt. 1872. The Astor, Lenox, and Tilden foundations were consolidated 1895, forming the New York Public Library (q.v.). The no. of vols. in the Lenox library the previous year was abt. 86,000.

LENS, löng: town of France, dept. of Pas-de-Calais, 17 m. s.s.w. from Lille. Pop. (1881) 10,500.

LENS, n. lenz, Lenses, n. plu. lenz'ez [L. lens, a lentil: It. lente, a lentil, a lens—so called from the resemblance of its shape to the seed]: in optical instruments, a piece of glass of a convex, concave, or other shape, for changing the direction of rays of light, and thus magnifying or diminishing objects. Crystalline lens, see Crystal.—A lens is a circular section of any transparent substance, having its surfaces either both spheri-



Fig. 1.—Lenses.

1, double-convex; if the surfaces are of equal curvature, equi-convex; 2, plano-convex; 3, convexo-plane; 4, double-concave, or concavo-concave; 5, plano-concave; 6, concavo-plane; 7, convex-meniscus; 8, concave-meniscus; 9, convexo-concave; 10, concavo-convex. The arrow shows the direction in which the light is supposed to fall.

cal, or one of them plane and the other spherical. As represented in fig. 1, a ray of light in passing through a lens is bent toward its thickest part; hence lenses are either convex (thickest in middle) or concave (thickest at edges). The former make the rays more Convergent (see Convergence) than before, the latter make them more Divergent. The point to which the rays converge, or from which they diverge, is called the focus—principal focus when the rays are parallel. The focus for a convex lens is real, i.e., the rays actually pass through it, and form an inverted image smaller or larger than the object according as the object is at a distance greater or less than twice the principal focal length; but the image is erect and magnified if the object be within the principal focal length. For a concave lens the focus is virtual—the rays seem to come from it and form an erect image smaller than the object.

y 1 3453

The following is the mode of finding the principal focus when parallel rays fall on a double convex lens (fig. 2): O is the centre of the curved surface PAP', and O' of the surface PBP'; q is the point toward which the rays tend while passing through the lens, and F the point to which they converge after emergence. Let OA = r, O'B = s, Aq = f', and BF (the focal length) = f; then neglecting the thickness of the lens, which may be done when the curvature of the lens is small, Aq = Bq, and AF = BF. By the demonstration given under the ar-

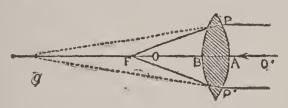


Fig. 2.

ticle Dioptric, we find $f' = \frac{\mu}{\mu - 1} r$, for the refraction

at the first surface; and, for the second surface, we find, in the ordinary treatises on Optics, that when a pencil

of converging rays emerges from a lens, $\frac{\mu}{f'} = \frac{\mu - 1}{s} - \frac{1}{f}$.

Adding this formula to the former, we obtain 0 =

 $(\mu-1)\left(\frac{1}{r}+\frac{1}{s}\right)-\frac{1}{f}$, or $\frac{1}{f}=(\mu-1)\left\{\frac{1}{r}+\frac{1}{s}\right\}$; and if the lens be equi-convex (r=s), and of glass $(\mu=\frac{3}{2})$, we have

This result is equally correct for a

 $\frac{1}{f} = \frac{1}{r}$, or f = r. This result is equally correct for a

double concave lens; but if the thickness of the lens be taken into account, there is a small quantity which is

additive to the value of $\frac{1}{f}$ in the convex, but subtractive

in the concave lens. The determination of the principal focus in the other forms of lenses, will be found in the ordinary text-books. The lenses in fig. 1, though they may be of the same focal length, have peculiar properties which render them suitable for particular optical instruments; thus, the convexo-plane lens has only one-fourth of the aberration of a plano-convex, or two-thirds of an equi-convex or equi-concave of the same focal length; but, in general, the equi-convex is the most desirable form. Aberration* has been to opticians what refraction is to the astronomer, an unwelcome intruder, which spoils his finest theories, and limits, the accuracy

^{*} The directions which have been given for finding the foci of lenses, apply only to rays which pass through and near the centre of the lens; the rays which pass near the edges converge to a different focus, and the distance between these two foci is called the longitudinal aberration.

of his results. This aberration has, indeed, been destroyed by combining lenses of equal and opposite aberrations, as, for instance, uniting, by means of Canada balsam, a double convex with a double concave. A still better method would be the formation of lenses having one side spherical, and the other of an ellipsoidal or a hyperboloidal form; but this has not yet been successfully accomplished. Convex lenses of glass, rock-salt, ice, etc., may be used as 'burning-glasses,' since radiant heat is refracted according to the same laws as light—the hot focus being nearly coincident with the luminous one. Platinum, gold, etc., have been fused in three or four seconds by this means.

LENT, v. lent: pt. and pp. of Lend, which see.

LENT, n. lent [AS. lencten, the spring, Lent: Dut. lente; Ger. lenz, spring]: the fast of 40 days before Easter; beginning at Ash-Wednesday and extending through the Saturday which ushers in the Easter Day: see ASH-WEDNESDAY: EASTER: FAST. LENTEN, a. lent'en, pertaining to Lent; sparing.—Lent is observed in the Roman, and in the Greek, and other Oriental churches. It is certainly of very ancient institution, though the New Test. contains no reference to it. earliest allusions to a fast preparatory to Easter are by Irenæus and Tertullian, who speak of such a fast as then established, though with no intimation of its beginning much before Good Friday. Irenaus, writing to Victor. Bp. of Rome, says: 'Some think they ought to fast for one day, others for two days, and others even for several, while others reckon 40 hours both of day and night to their day' (Eusebius, Hist. Ecclesia, v. 24). Gregory the Great (pope 590-604) speaks of the fast as of 36 days' duration, i.e., six weeks not counting in the six Sundays. It is not known by whom, or when, the four preceding days were added, beginning with Ash-Wednesday. The 40 days' period, now held as commemorative of our Lord's 40 days' fast, or of the similar perfunctory fasts of Moses and of Elias, commences with Ash-Wednesday, between which day and Easter-Sunday (omitting the Sundays on which the fast is not observed), 40 clear days intervene. The rigor of the ancient observance, which excluded all flesh, and even the so-called 'white meats,' is now much relaxed; but the principle of permitting but one meal, with a slight refection or collation, is retained, though the practice of even this is not strict. In Spain, during the Crusades and the wars with the Moors, a practice arose of permitting, in certain cases, the substitution of a contribution to the holy war for the observance of the Lenten abstinence; and though the object has long since ceased, the composition is still permitted, under the same title of the Cruzada. In the Greek Church, the ante-paschal fast is of 48 days; but it is only one of four similar fasting periods observed in that church: see FAST. In the Anglican Church, and in

LENTANDO—LENTIL.

the Prot. Episc. Church in the U. S., Lent is retained as a church season of the calendar, with special services, and proper collects and prayers; but the observance of the fast in the strict sense is left to the discretion of each individual. In most of the European Prot. churches the Lenten season is observed, especially in the Lutheran Church; also by the Lutherans in the U. S.; but with other non-prelatical churches in this country a formal observance of L. is very rare, and has till recently been almost unknown.

LENTANDO, *lĕn-tân'dō*, in Music: same as *rallen-tando* or *ritardando*, meaning a gradual decrease in the speed of the movement. See Lento.

LENTIBULARIACEÆ, *lĕn-tĭb-ū-lär-ĭ-ā'sē-ē*: natural order of exogenous plants, allied to *Primulaceæ*, but distinguished by irregular corolla, and diandrous flowers. It has also intimate relations with *Scrophulariaceæ*. It contains nearly 200 known species, all herbaceous, and all living in water or marshes. They abound chiefly in the tropics. Bladderwort (q.v.) and Butterwort (q.v.) are among the few extra-tropical species.

LENTICEL, n. lĕn'tĭ-sĕl, Len'ticel'la, n. plu. -sĕl'lă, or Len'ticels n. plu. -sĕlz [L. lentĭc'ŭla, a little lentil, a lentil shape—from lens, a lentil]: small lens-shaped spots on the bark of many plants, from which roots issue under circumstances favorable to their development. Lenticular, a. lĕn-tĭk'ū-lėr, resembling a lens; in the form of a double convex lens. Lentic'ularly, ad. -lĭ. Len'tiform, a. -tĭ-fawrm [L. forma, shape]: of the form of a double convex lens.

LENTIGO, n. lĕn-tī'gō [L. lentīgo, a lentil-shaped spot—from lens, a lentil]: a freckly eruption on the skin. Lentig'inous, a. -tīj'ī-nŭs, or Lentig'inose, a. -ĭ-nōs, freckly; scurfy; in bot., carved with numerous dots, as if dusted.

LENTIL, n. lĕn'tĭl [F. lentille—from L. lentĭc'ŭla, a little lentil—from lens, a lentil], (Errum lens): annual plant of the bean kind; an annual of the same genus with Tares (q.v.), ord. Leguminosæ; native of countries near the Mediterranean, and cultivated from the earliest times, yielding an esteemed kind of pulse. The English translation of the Bible is probably correct in calling the red pottage with which Jacob purchased Esau's birthright, pottage of lentils; the red color being very characteristic of this, which is still a very common article of food in the East. The L. is extensively cultivated in s. Europe, Egypt, and the East, and to some extent in other parts of the world. It has a weak and branching stem, 6-18 inches high, and pinnate leaves with 6-8 pair of leaflets, the upper leaves only running into tendrils. The flowers are small, white, lilac, or pale blue, the corolla much concealed by the calyx, which is divided almost to its base into five narrow teeth. The pods are very short and blunt, thin, two-seeded, and

LENTIL.

smooth; the seeds have the form of a round lens, the ex on both sides. There are numerous varieties, having



Lentil.

white, brown, and black seeds, which also differ considerably in size, the greatest diameter of the largest being about equal to that of moderate-sized pease. Lentils are very nutritive food, containing an uncommonly large amount of nitrogenous substances, and more easily digested than pease. The husk of the seed, however, is indigestible; and for proper cooking, lentils require at least two and a half hours. They have recently become common in the shops of Britain and other western countries, in a form resembling split pease, and in that of meal (L. farina), which is the basis, if not the whole substance, of Revalenta Arabica and Ervalenta, so much advertised as food for dyspeptic patients, at prices greatly exceeding those for which L. meal can be obtained under its own name. Lentils mixed with pease in the making of pea-soup, greatly diminish its tendency to produce flatulence. The bad reputation which lentils have had as producing flatulence and indigestion and even symptoms of poisoning, may be attributed to the substitution of the outwardly similar bitter vetch or tare L., whose seeds are undoubtedly deleterious. Lentils are excellent food also for horses; and the herbage used as green food for cows, increases the production of milk. The L. grows best in a light and rather dry soil. In a very rich soil, it produces comparatively few pods. Some of the varieties thrive even on very poor soils. The whole life of the plant is shorter than that of any other of the

LENTINI-LEO.

Leguminosæ ordinarily cultivated in more western lands. A moist climate seems to prevent its successful cultivation—the ripe or ripening seeds being very apt to be injured by moisture. There is no evident reason, however, why this plant should not be cultivated for green food of cattle.

LENTINI, *lĕn-tē'nē* (anc. *Leontini*): town of Sicily, province of Siracusa, near the lake of L., on a hill 15 m. s.s.w. of Catania. It has a large gunpowder mill, and derives a good revenue from the fishery in Lake L. Pop. 12,000.

LENTISK, n. lĕn'tĭsk [L. lentis'cus—from lentus, sticky: F. lentisque]: a tree or shrub from which the resinous exudation called mastic is obtained; the Ristācĕa lentis'cus, ord. Anacardĭācĕæ.

LENTO, ad. lĕn'tō [L. lentus, adhesive, slow: It. lento], also Lentamente: in music, slowly; smoothly: according to the best authorities, the movement denoted by Lento is quicker than Adagio, or between it and Andante. Lentando, see above. Len'tor, n. -tŏr, tenacity; thickness of fluids; slowness—applied to the blood. Len'tous, a. -tŭs, viscous; tenacious.

LEN'TULUS, EPISTLE OF: pretended letter of Publius Lentulus, 'President of the people of Jerusalem' (there was no such office), to the Roman senate; giving a pleasing description of the personal appearance of the Lord Jesus; found first in a Ms. copy of the works of Anselm from the 12th c. It is certainly not earlier than the 4th c., probably not earlier than the 11th. There are varying Ms. copies of it in European libraries. For several centuries this letter was greatly prized, and is still deemed genuine by some Rom. Catholics. Dr. Edward Robinson, after thorough investigation, gives the following statement: 'In favor of its authenticity we have only the purport of the inscription. There is no external evidence whatever. Against its authenticity we have the great discrepancies and contradictions of the inscription; the fact that no such official person as Lentulus existed at the time and place specified, nor for many years before and after; the utter silence of history in respect to the existence of such a letter; the foreign and later idioms of its style; the contradiction between the contents of the epistle and established historical facts; and the probability of its having been produced at some time not earlier than the 11th century.'—See Christ, Pictures of.

LEO, n. $l\bar{e}'\bar{o}$ [L. $l\bar{e}\bar{o}$ or $le\bar{o}nem$, a lion]: the lion, the fifth sign of the zodiac (see Zodiac). Leonine, a. $l\bar{e}'\bar{o}$. $n\bar{\imath}n$, of or like the lion. Le'oninely, ad. $-l\bar{\imath}$. Le'onine, or Le'onina, n. $-n\bar{\imath}'n\check{a}$, a rare variety of agate of a paleyellow color, variegated with white, black, and green, and bearing some resemblance to a lion's skin. Leonine City, see Rome.

LEO, le'o, I., THE GREAT (SAINT), Pope of Rome: one of the most eminent of the Latin Fathers: b. of a distinguished Eutrurian family at Rome about the end of the 4th c., d. 461 (pope 440-461). Of his early life, little is known. On the death of Sixtus III., L. was chosen his successor. It is in his pontificate that the regular series of papal letters and decretals may be said to commence. Leo's letters, addressed to all parts of the church, evince prodigious activity and zeal, and are used by Roman controversialists as evidence of the extent of jurisdiction of the Roman see. In a council at Rome 449, he set aside the proceedings of the council of Ephesus, which had pronounced in favor of Eutyches (q.v.), summoned a new council at Chalcedon, in which his legates presided, and in which Leo's celebrated 'Dogmatical Letter' was accepted 'as the voice of Peter,' and adopted as the authentic exposition of the orthodox doctrine on the person of Christ. For the history of Leo's interposition with Attila in defense of the Roman city and people, see Attila; and his subsequent similar interposition with Genseric, less dramatic in the incidents with which history or legend has invested it, was at least so far successful as to save the lives of the citizens, and the public and private buildings of the city of Leo died at Rome. His works, the most impor-Rome. tant of which are his Letters and Sermons, were printed first in 1479; afterward by Quesnel (2 vols. Paris, 1675); but a much more complete and trustworthy ed. is that of Cacciari (3 vols. fol. Rome 1753-55), and of the Brothers Ballerini (Venice 1757).

LE'O III., Pope of Rome: b. Rome, d. 816 (pope 795-816). His pontificate, covering the last 18 years of the reign of Charlemagne, was the epoch of the formal establishment of the Empire of the West. He was elected pope on the death of Adrian I. During the greater part of the 8th c., the popes, through the practical withdrawal of the eastern emperors, had exercised a temporal supremacy in Rome, which was fully recognized by the gift of Pepin, and placed under the protectorate of the Frank sovereigns, who received the title of Patrician. The pontificate of Leo, however, was a troubled one, and 799 he was treated with much violence, and compelled to flee to Spoleto, whence he afterward repaired to Paderborn, to hold a conference with Charlemagne. On his return to Rome, he was received with much honor by the Romans, and the chiefs of the conspiracy against him were sentenced to banishment. In the following year (800), Charlemagne, having come to Rome, was solemnly crowned and saluted emperor by the pope; and the temporal sovereignty of the pope over the Roman city and state, under, however, the suzerainty of the emperor, was formally established. In 804, Leo visited Charlemagne at his court at Aix-la-Chapelle. With Charlemagne's successor, Louis le Débonnaire, Leo was embroiled in a lispute about the right of sovereign jurisdiction in Rome, which had not been brought to a conclusion when Leo died.

LE'O X. (GIOVANNI DE' MEDICI): 1475, Dec. 11-1521, Dec. 1 (pope 1513-21); b. Florence; second son of the celebrated Lorenzo de' Medici, 'the Magnificent.' From his cradle he was intended for the ecclesiastical career. His education was intrusted to the ablest scholars of the age; and through the influence of his father with the pope, Innocent VIII, he was created cardinal 1488 at the unprecedented age of 13 years. In the expulsion of the Medici from Florence after the death of Lorenzo, the young cardinal was included, and he used the opportunity for foreign travel. He was employed as legate by Julius II.; and during the war with the French, he was taken prisoner in the battle of Rayenna, but soon made his escape. On the death of Julius II., Cardinal de' Medici was chosen pope at the early age of 37, under the name Leo X. His first appointment of the two great scholars Bembo and Sadoleto as his secretaries was a pledge of the favor toward learning which was characteristic of his pontificate; but he did not neglect the more material interests of the church and the Roman see. He brought to successful conclusion the fifth council of the Lateran (see Council), and the schism which was threatened by the rival council of Pisa. He concluded a concordat with Francis I. of France, which continued to regulate the French church till the Revolution. In the political relations of the Roman see, he consolidated, and, in some degree, extended the re-conquests of his warlike predecessor, Julius II., though he ilso used his position and his influence for the aggrandizement of his family. His desertion of the alliance of Francis I. for that of his young rival, Charles V., though the subject of much criticism, was dictated by a sound consideration of the interests of Italy. But it is most of all as a patron of learning and art that the reputation of Leo has lived with posterity. Himself a scholar, he loved learning for its own sake; and his court was the meeting-point of the scholars of Italy and the world. He founded a Greek college in Rome, and established a Greek press, which We endowed munificently (see Lascaris). In the encouragement of art, he was no less Painting, sculpture, architecture, were equally favored; and it is to his vast project for the rebuilding of St. Peter's and to the step to which he had recourse for procuring the necessary funds-his permitting the preaching of an indulgence, one of the conditions of obtaining which was the contribution to this work on St. Peter's—that the first rise of the Reformation in Germany is ascribed. Leo himself seems to have regarded the reforming movement as of little importance, describing it as 'a squabble among the friars;' and though he condemned the propositions of Luther, and issued a commission to inquire into his doctrines,

his measures, on the whole, were not marked by much severity. His patronage of fine art removed the reproach of indifference to culture which from the beginning had been urged against the church. His personal habits were in keeping with his tastes-splendid and munificent in the highest degree; but in his moral conduct he maintained strict propriety, and his character, though not free from the stain of nepotism, the vice of that age, and more modelled on the ideal of an enlightened prince than on that of a zealous and ascetic churchman, was beyond imputation of unworthiness or irregularity. His death, which occurred rather suddenly, during the public rejoicings in Rome for the taking of Milan, was by some ascribed to poison; but there seems no reason for the suspicion. It was doubtless the result of his long exposure at the open window of a chamber in his villa in the country, to the chill and malarious night air See Roscoe's Life and Pontificate of Leo in November.

X. (1805).

LE'O XIII. (GIOACCHIMO PECCI), Pope and head of the Roman Catholic Church (1878-1903); b. of old patrician family at Carpineto, a village in central Italy, 1810, Mar. 2; son of Count Ludovico Pecci. He studied at the Collegio Romano, graduated in law and theology, and becoming a favorite with Pope Gregory XVI., was named by him a prelate of the household. As delegate successively at Benevento, Spoleto, and Perugia, he showed great energy in the government of these provinces, and was especially vigorous and successful in suppressing brigandage. Though but 33 years of age, he was 1843 made Abp. of Dalmatia, and sent to Brussels as papal nuncio. In 1846 Gregory selected Pecci for the dignity of cardinal, but his friendly views in favor of the young abp. were frustrated by death, and it was not till 1853 that Gregory's successor, Pius IX., saw fit to confer the cardinal's hat. Cardinal Pecci was no favorite of the all-powerful Cardinal Antonelli, and was accordingly not prominent in papal councils; but 1877 he was made Camerlengo (papal Finance Minister), and at the death of Pius IX., was chosen his successor. After his accession he refused to accept the income regularly voted him by the Italian parliament, confined his movements to the Vatican palace and grounds secured to him by the govt., and issued numerous encyclicals demanding a restoration of the temporal power and sovereignty. In Italy he latterly exhibited a disposition to recede somewhat from his extremist position; restored the privilege of the priesthood to take part in political meetings and exercise the franchise; and evinced some desire for a reconciliation with the state based on a restricted sovereignty over the portion of Rome on which the Vatican palace and St. Peter's Church stand, with the part of territory extending as far as Civita Vecchia, which would permit the reception of embassies on papal territory. In Germany

he has brought the 'culturkampf' to a fairly successful issue, so that the administration of Rom. Cath. Church affairs is far more satisfactory to the govt. and to the papacy than for many years. In France he made terms with the govt. after the proscription acts 1879-80, and 83 (see FERRY, Jules François Camille: Edu-CATION, State Education in France), which secured conditional toleration for the clergy. In Ireland he condemned 'boycotting' and the 'plan of campaign,' but otherwise left the management of affairs in the hands of the local church authorities. In the abbey of Grottaferrata, near Rome, which had become completely Latinized, he ordered the readoption of the Oriental rite for public worship, and the restoration of the old basilica to its former style of architecture. portance of this step as a movement toward reconciliation will be understood when it is known that there are numerous communities in Italy and Sicily who worship in Greek according to the Greek rite and yet are united to Rome. He also issued encyclicals strongly condemning socialism, nihilism, and communism.

1887, Dec. 31, L. celebrated the golden jubilee of his priesthood, and received \$6,700,000 in Peter's Pence, and gifts worth nearly \$20,000,000 from all parts of the world. On the occasion of his episcopal jubilee, golden anniversary (1893, Feb. 19), vast numbers flocked to Rome from all countries. The Pontifical jubilee of his Holiness (1902, Mar. 3), was inaugurated by a solemn service; and 1903, Mar. 3, he celebrated the silver anniversary of his coronation as the successor of St. Peter. Personally, L. was a shrewd business man and an astute politician, benevolent, approachable, hard-working, and

a model of simplicity. He died 1903, July 20.

LEO III., FLAVIUS (surnamed 'the Isaurian,' from his birthplace), Emperor of Constantinople: abt. 680-741, June 18 (reigned 718-741). He was, like most of the eastern emperors, first a soldier in the imperial army, and soon rose to eminence through his military talents. Anastasius II. appointed him to guard the Asiatic portion of the empire from the ravages of the Arabs, but on the deposition of the emperor by Theodosius III., Leo overthrew the usurper, and assumed the crown. He was scarcely seated on the imperial throne, when the Caliph Suleiman laid siege to Constantinople by land and sea: this, the third siege of the capital by the Arabs, lasted two years, but was finally raised through the energy of Leo. The governors of several provinces had meantime rebelled, and it cost Leo several years of petty warfare before peace was restored to the empire. Leo then issued an edict condemning the worship of images in the Cath. churches throughout the empire. The edict produced a most startling effect; rebellions broke out in all quarters, and Ravenna, Rome, and the other Greek possessions in Italy were finally severed from the empire. Leo, enraged at his losses, determined to take

LEOBSCHÜTZ-LEON.

revenge on their author, the pope, and accordingly removed Greece, Illyria, and Macedonia from his spiritual jurisdiction, subjecting them to the Patriarch of Constantinople, thus creating a permanent breach between the Latin and Greek churches (734). During the remainder of his reign, little of importance occurred, excepting an indecisive war with the Arabs, and a great earthquake (740, Oct.), which caused dreadful calamities throughout the empire.

LEOBSCHÜTZ, lā'ōp-shüts: town in s. Prussia, in Silesia, near the river Zinna. It has large corn and flax

markets. Pop. (1880) 12,018; (1890) 12,586.

LEOMINSTER, lem'in-ster: town in Worcester co., Mass., on the Nashua river and the Fitchburg r.r. and the n. div. of the Old Colony r.r.: 4 m. s.e. of Fitchburg, 18 m. n. of Worcester, 54 m. w.n.w. of Boston. It is lighted with gas and electricity; has a system of waterworks that cost \$150,000; contains a town hall, 6 churches, high school, graded grammar schools, public library, 1 national bank (cap. \$150,000), 1 savings bank, and newspapers; and manufactures woolen and linen goods, furniture, leather-board, paper, toys, pianos, children's carriages, and tanned leather. The proximity of L. to the Wachusett Mountain makes it a summer resort. Pop. (1880) 5,772; (1890) 7,269; (1900) 12,392.

LEOMINSTER, lem'ster: market-town, and municipal borough of England, county of Hereford, 12 m. n. of the city of Hereford, on the river Lug. The immediate vicinity of L. is one of the most celebrated cattle-breeding districts in the world. Pop. (1891) 5,675.

LEON, lā-ōn': city in the state of Guanajuato, Mexico; on the right bank of the Rio Torbio and on the Mexican Central r.r.; 180 m. n.w. of Mexico City; 6,000 ft. above sea-level. It is beautifully laid out and substantially built; contains a large and handsomely ornamented public square; old palace of the governor, several churches, 3 convents, hospital, Latin and primary schools, and There are large manucommodious business houses. factures of cotton and woolen goods, leather and saddlery; and extensive commerce with the thriving cities in the plain of Guanajuato. There are abundant ironmines and remarkably rich agricultural lands near it. —L. was founded 1576, was made a city 1836, and became a commercial emporium 1855. Since then r.r. communications have greatly extended, and its growth and prosperity have been rapid, and in pop. it has attained the rank of second city in the country, and even aspires to rival Mexico as the national capital. Pop. (1890) 47,-739.

LEON, lā-ōn': city of Nicaragua, near the n.w. extremity of the lake L., about 10 m. from the Pacific Ocean, finely situated in a most picturesque district. It contains a noble cathedral and a university. Pop. about 45,000.—The lake, called also Managua from the city at

LEON-LEONARDO DA VINCI.

its s. end, is 35 m. long, 15 m. wide: it is part of one of the proposed canal routes across Central America petween the Atlantic and the Pacific: see NICARAGUA, LAKE: INTEROCEANIC SHIP CANAL.

LEON': formerly a kingdom, subsequently a province of Spain, now subdivided into the provinces of Salamanca, Zamora, and Leon; in the n.w. of Spain, s. of Asturias, and bordering on Portugal: about 15,000 sq.m. Pop. (1870) 881,930 of mod. prov. (1900) 386,083. The country is intersected by the Douro, mountainous, generally fertile, but miserably cultivated. It affords pasturage to vast flocks of merino sheep. The inhabitants are mostly uneducated and lazy, but are very high-spirited, rich in peculiar customs, of pure Spanish descent, sincere, hospitable, and brave. It is said that in the high districts s. of Salamanca, remnants of the pure Gothic tribes exist; and at Astorga, remnants of the old Celtiberi—the Maragatos. The means of communication are everywhere very defective. The Kingdom of Leon was erected, 746, by Alfonso the Catholic out of the provinces that he had wrested from the Saracens, and the older kingdom of Asturias; and 1230 it was permanently united to Castile.

LEON' (Legio septima gemina of the Romans): capital of the former Spanish province of L.; between the rivers Bernesga and Torio, in a beautifully wooded plain, 85 m. n.w. of Valladolid. Part of the old Roman wall, 20 ft. thick, is standing. The streets are crooked and dirty, but the churches are numerous and splendid, especially the cathedral, a specimen of the purest Gothic, containing the tombs of many sovereigns of L., saints, and martyrs. The trade of L. is now unimportant. Pop. 5,720.

LEON', PONCE DE: see PONCE DE LEON.

LEONARD, lĕn'erd, James: abt. 1618-91; b. England: established in Taunton, Mass., the first iron-works in the American colonies, 1652. He died there.

LEONARDO DA VINCI, lā-o-nâr'do dâ vīn'chē: 1452-1519, May 2; b. Vinci, in the Val d'Arno, near Florence: one of the most illustrious names in history; whose works in painting are classed with those of Raphael and Michael Angelo, and who was also sculptor, architect, engineer, inventor, anatomist, botanist, mathematician, astronomer, poet, musician. He was born out of wedlock, of a peasant mother. His father, Pietro da Vinci, notary to the signiory of Florence, acknowledged him from the first, and brought him up in his own house with care, placing him in good time with Andrea Verrocchio, an able sculptor, and a good painter; but in painting, his pupil soon surpassed him. In 1483 L. went to Milan, and the Duke Lodovico il Moro conferred on him an annual pension of 500 dollars. Besides performing various services for the duke, particularly as an engineer, he instituted an Acad. of Arts 1482, of which he

LEONARDO DA VINCÎ.

was named director, and which influenced most beneficially the Lombard school of painting. It was in 1497, when 45 years of age, that he executed his famous picture, The Last Supper, painted in oil on the wall in the refectory of the Dominican convent of Santa-Maria-delle-Gracie. He remained in Milan till 1500, when, on its occupation by the French, he returned to Florence, and 1502 was appointed architect and chief engineer to Ccsare Borgia, capt.gen. of the pope's army. In 1503, he was employed by Soderini Gonfaloniere of Florence to paint one end of the council-hall of the Palazzo Vecchio. For this, L. completed only the celebrated cartoon called the Battle of the Standard; another cartoon for a painting in the same apartment—the equally celebrated design called the Cartoon of Pisa—having been executed at the same time by Michael Angelo. He returned to Milan 1506. In 1513, he visited Rome in the train of Giuliano de' Mcdici, who went there to assist at the coronation of his brother, Leo X.; and 1515, accompanied Francis I. to Bologna, where he signed the concordat with Leo X. On the pressing invitation of Francis, he accompanied that monarch to France, 1516, with his pupils, Salai and Melzi. During his whole stay in France his health was not good, and he executed no paintings there, being occupied chiefly in engineering. His death occurred at Amboise. The genius of L. was universal. As a painter, he imparted to his works certain qualities of the highest kind, for his drawing evinces very great delicacy and elevation of style, not modelled on the antique, but formed on a profound knowledge of nature; and in his treatment of light and shadow, he infused a degree of power, combined with softness, into his productions that invests them with peculiar charm. influence of his style has operated powerfully on the schools of Milan and Parma. L.'s Treatise on Painting, Trattato della Pittura, has been published in several languages: the principal ed. Paris, folio, by Du Fresne, illustrated with drawings by Nicolas Poussin: best ed. as regards the text, Rome 1817. Mr. Hallam says, in Introduction to the Literature of Europe: 'Leonardo's greatest literary distinction is derived from those short fragments of his unpublished writings that appeared not many years since, and which, according, at least, to our common estimate of the age in which he lived, are more like revelations of physical truths vouchsafed to a single mind, than the superstructure of its reasoning upon any established basis. The discoveries which made Galileo and Kepler and Maestlin and Maurolieus and Castelli, and other names illustrious, the system of Copernicus, the very theories of recent geologists, are anticipated by Da Vinci, within the compass of a few pages, not, perhaps, in the most precise language, or on the most conclusive reasoning, but so as to strike us with something like the awe of preternatural knowledge. These writings were published by Venturi (Paris 1797),

LEONFORTE-LEONINE VERSES.

entitled: Essai sur les Ouvrages Physico-Mathématiques de Léonard da Vinci, avec des Fragmens tirés des Manuscrits apportés de l'Italie. The Mss. were afterward returned to Milan. See Leonardo da Vinci and his Works, with Life, by Mrs. C. Heaton (London 1874).

LEONFORTE, $d\bar{a}$ - $\bar{o}n$ - $f\bar{o}r't\bar{a}$: Sicilian town, province of Messina, in a mountainous neighborhood, on the shore of the Mediterranean. It is surrounded by walls. There is trade in oil, wine, and grain. Pop. 11,522.

LEONIDAS, lē-ŏn'ĭ-das, I., King of Sparta: (reigned B.C. 481-480) d. B.C. 480; son of Anaxandrides. He succeeded his half-brother, Cleomenes I. When the Persian monarch Xerxes approached with an immense army, L. opposed him at the narrow pass of Thermopylæ with a force of 300 Spartans, and more than 5,000 auxiliaries. The Persians attempted in vain to win over L. by the promise of making him ruler of the whole of Greece; and when Xerxes sent a herald ealling the Greeks to lay down their arms, the Spartan answered: 'Let him come and take them.' When the Persians, through the treachery of one Ephialtes, had been enabled to turn the pass so that their progress could be barred no longer, L. dismissed all his army exeept the 300 Spartan citizens, 700 Thespians, and some Thebans. Then he and his little band threw themselves on the swarming myriads, and found a heroic death. The Spartans and Thespians all died on the field; the Thebans, who had been suspected of treachery, laid down their arms. The story that L. at Thermopyle had but 300 men is baseless.

LEONINE VERS'ES, le'o-nīn: hexameter and pentameter verses, common in the middle ages, which rhymed at the middle and end; named after Leoninus, eanon of the church of St. Victor, in Paris, about the middle of the 12th e., or, as others say, after Pope Leo II., a lover and improver of music. Traces of this kind of versification appear here and there in the Roman poets, especially in Ovid, in some of whose Epistles, indeed, they occur on an average once in every eight lines. Camden gives some curious speeimens from Walter de Mapes, Michael, the Cornish poet, and Dan Elingham, a monk of Linton. The story of the Jew who, having fallen into a refuse-pit on Saturday, would not be helped out, because it was his Sabbath, while the Christian, who offered him assistance, refused to do so next day, because it was his, has been thrown into Leonine verse as follows:

> Tende manus Salomon, ego te de stercore tollam; Sabbata nostra colo, de stercore surgere nolo. Sabbata nostra quidem Salomon celebrabis ibidem.

Leonine verse is not uncommon in English poetry, e.g.:

Arethusa arose from her couch of snows
In the Acroceraunian mountains,
From peak and from crag, with many a jag
Shepherding her bright fountains.

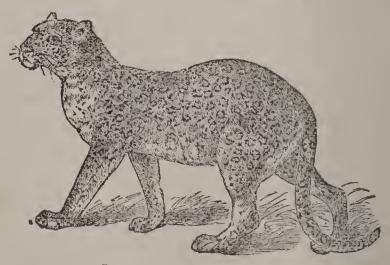
LEONISTS-LEOPARD.

LEONISTS, n. le'on-ists, or Leonistæ, n. le-on-is'te: in chh. hist., name given to the Waldenses (q.v.), from Leon, the German name of the city of Lyons, where they originated, and from which they called themselves the 'Poor of Lyons.'

LEONOWENS, ANNA HARRIETTE (CRAWFORD): educator: b. Caernarvon, Wales, 1834, Nov. 5: daughter of Thomas Maxwell Crawford, British officer killed in India. She married Thomas L., also of the British army, and after his death in India resided sometime in Singapore. In 1863 she went to Bangkok as governess to the family of the late first king of Siam, who had learned English from American missionaries; and she was instructor to the royal children and private sec. to the king in his foreign correspondence till 1867, when she resigned and removed to New York. She had a special care for the present king, who, on succeeding to the throne 1868, showed the influence of western enlightenment by abolishing slavery in his kingdom. In New York Mrs. L. established a school to train teachers in the kindergarten system, wrote for the magazines, and published The English Governess at the Court of Siam (1870); The Romance of the Harem (1872); and Life and Travels in India (1884).

LEOPARD, n. lep'ârd [F. léopard—from mid. L. leopar'dus; Gr. leopar'dos, a leopard, a supposed beast engendered between the lion and the panther—from L. leō, a lion; pardus, a panther]: a large beast of prey, having a beautiful spotted skin. Leopard-stone, a variety of compact felspar, spotted with oxide of iron and manganese. Leopard's-bane, the mountain-tobacco, a plant containing an acrid stimulant, used in medicine; the Arnica montāna, ord. Compos'itæ, sub.-ord. Corymbif'eræ; also the genus Doron'icum, ord. Compos'itæ.

LEOP'ARD (Felis leopordus): one of the larger Felidae (q.v.), now generally supposed identical with the pan-



Leopard (Felis leopardus).

ther (F. pardus), although by some they are regarded as varieties, and others still suppose them distinct species.

Great confusion has prevailed in the nomenclature; the panther and pardalis of the ancients are not certainly known; the jaguar was erroneously described as the panther by Buffon; the puma is often called panther in America; the L. is known by the name of tiger in Africa; and as Sir J. E. Tennent tells us, it is by mistake often called cheetah in Ceylon. Supposing the L. and panther to be one species, it may be described as characterized by a peculiar gracefulness, slenderness, and flexibility of form, with a very long tail, and spotted fur, the spots being arranged in numerous rows along the sides, and each spot composed of five or six small spots arranged in a circle or rosette. The general color is yellowish; the lower parts lighter; the spots darker than the general color of the fur. The L. is extremely agile, and has in great perfection the power of leaping and that of climbing trees. It haunts wooded places, and is seldom found in open regions of long grass, like the tiger. When pursued, it takes refuge, if possible, in a tree, and if hard pressed, springs down on its assailants. It is cunning, and adopts devices similar to those of the fox for carrying on its depredations, and concealing its place of retreat. Deer and antelopes are its habitual prey; but it is equally ready to feed on pigs, poultry, or whatever may be found in the vicinity of a farm or village. The size and strength of the L. render it as dangerous to man as any of the Felidæ; but it generally seems to dread and flee from man, unless assailed. It is very capable of domestication.

LEOP'ARD, in Heraldry: appropriated to the armorial ensigns of abbots and abbesses, for the reason (assigned by some heralds) that the L. is the issue of the pard and lioness, and that such hybrids are unproductive. However, the representations of leopards, at least in English heraldry, are so exactly like those of the lion passant gardant, that it has been made a question whether there is any difference; and further whether the three animals in the royal escutcheon of England were lions or leopards. In early times we find them blazoned in both ways, and the true solution seems to be, that it was customary to draw a lion in the attitude since called rampant, and a leopard as passant gardant. When coats of armor were multiplied, it became necessary to difference them by varying the position of the animals depicted; and the lion was naturally supposed to be rampant and in profile, the leopard passant gardant. When the conventional animal that might stand for either was passant and in profile, he was designed a lion-leopardé; and when rampant gardant, he was a leopard-lionné. The lion was at first borne singly, and his natural attitude was considered to be rampant; but when a second and third lion were added, the lions became, for convenience, lionsleopardé or passant, as in the seal of King John; a further change of position to passant gardant made them heraldically leopards; and it was not till the middle of

LEOPARDI--LEOPOL.

the 15th c. that the lions of England regained their original name.

In English heraldry, the L.'s head or face is oceasionally borne: if no part of the neck is shown, the proper blazon is a L.'s face; if a portion of the neck is drawn, it is a L.'s head erased or couped, according as it is cut off evenly or with a jagged edge.

LEOPARDI, lā-o-pâr'dē, Giacomo, Count: modern poet and elassical scholar of Italy: 1798, June 29-1837, June 15; b. Reeanati, a town in the march of Aneona. Without the aid of instructors, L., at the age of 17, had attained to a marvellous elassical scholarship. Latin and Greek he mastered as his mother-tongue, and composed some of his philological criticisms at the age of 19, when he was elected member of the Acad. of Science at Viterbo. Shortly afterward he departed from his secluded home for Rome, where he won the friendship of several celebrated men, among others, of Niebuhr, who was deputed to offer him the chair of Greek philosophy, in the Univ. of Berlin, which he declined. Ill health, acting on the temperament characteristic of genius, seems to have east a gloom over his spirit, which deeply tinged his impressions of men and things. On his return from Rome to his native place, his health grew seriously impaired, from the ardor with which he pursued his varied studies. He finally took up his abode in Florence, where he published his admired Canzoni and other works, amid a conflict with failing health, straitened finances, and deep despondency. In this bitter erisis of his life, he formed a warm friendship with the historian Antonio Ranicri; and by the delicate and incessant eares of Ranieri and his sister, the shattered, suffering poet was shielded to the hour of his death. From this period, a sensible softening of spirit became manifest in his writings; it seemed as if the poet had learned to value and cling to life and friends only when summoned to relinquish both. He died in his friend's arms at Naples, at the age of 39. His remains lie in a small church at Posi-The works of L. all are more or less the reflex of his morbid, desponding mind. They are remarkable for originality, vigor, and eleganec of style. Their tonc is unwaveringly subjective; their philosophy is unmitigated pessimism, therefore valueless through its lack The thoughts, which need the excuse of invalidism, are eonycyed in a style which as a literary medium is well-nigh perfect. His eolleeted works were published 1849, by Le Monnier, at Florence, under the title Versi e Prose di Giacomo Leopardi. His Italian love-sonnets are full of fire and grace; and his ingenious imitations of the antique form of composition, written in Greck and Latin, were so perfect, as to be mistaken by many for genuine long-lost gems of classical literature.

LE'OPOL: see LEMBERG

LEOPOLD—LEOPÓLD OF BABENBERG.

LEOPOLD, le'o-pold, I., George Christian Fred-ERICK, King of the Belgians: 1790, Dec. 16-1865, Dec. (reigned 1831-65); son of Francis, Duke of Saxe-Coburg-Saalfeld, and uncle of Queen Victoria of England. He received an excellent literary and scientific education. The marriage of his sister Juliana with the Grand Duke Constantine having closely allied the House of Saxe-Coburg with the imperial family of Russia, he became a gen. in the Russian army; but the menaces of Napoleon compelled him, 1810, to resign his commission. He afterward again joined the Russian army, and was in the batter of Lützen, Bautzen, Leipzig, and Kulm. Having visited England after the peace of 1815, he won the affections of Princess Charlotte, heiress of the throne, and was naturalized by act of parliament 1816, and received. an annual pension of £50,000. The marriage took place 1816, May 2; but the princess died in childbed 1817, Nov. 5, and her child did not survive. Prince L. then lived in complete retirement, sometimes in London, sometimes at his seat of Claremont. He received 1830, Feb., the offer of the crown of Greece, and at first favorably entertained the proposal, but afterward rejected it, because of the dissatisfaction of the Greeks with the arrangements determined on by the Great Powers. In 1831, June, he was elected, by a national congress, king of the Belgians, and July 21 his inauguration took place at Brussels. In 1832, he married Princess Louise, daughter of Louis Philippe, King of the French: she died 1850, Oct., leaving three children, the Crown Prince Leopold, Duke of Brabant, another son, and a daughter. L. was a very prudent and firm constitutional monarch. He was succeeded by his son Leopold II.

LE'OPOLD II., King of the Belgians: b. Brussels, 1835, Apr. 9 (succeeded to the throne 1865): son of Leopold I. and of Queen Louisa, daughter of King Louis Philippe of France. He married Marie Henriette, daughter of Archduke Joseph of Austria, 1853, Aug. 22; made a lengthened tour through Europe, Egypt, and Asia Minor with his wife 1855; was prominent in important discussions in the Belgian senate, especially in that relating to the establishment of a maritime service between Antwerp and the Levant; and succeeded his father 1865, He took a large interest in the Brussels African International Assoc.; induced Henry M. Stanley (q.v.) to undertake an expedition to develop the great basin of the Congo river under the auspices of the assoc.; and contributed \$250,000 per annum from his private means toward the enterprise. Stanley began this work 1879 and completed it 1884 by establishing trading stations along the Congo from its mouth to Stanley Pool (1,400 m.) and founding the Congo Free State, of which L. became undisputed sovereign 1885.

LE'OPOLD OF BABENBERG or BAMBERG: descendint of a noble family which derived its origin from the Frankish kings: first hereditary Markgraf of Austria

LEPANTO.

(983); whose descendants continued to rule over that country till the line became extinct, in the person of Frederick the Warlike, 1246. This family were prominent in the Guelph and Ghibelline conflicts of the 12th c., and obtained the duchy of Bavaria, 1138, on the rebellion of Henry the Proud, but after a long conflict with his son, Henry the Lion, were compelled to resign it to that prince 1156.

LEPANTO, $l\bar{e}$ - $p\check{a}n't\bar{o}$ or $l\bar{a}$ - $p\hat{a}n't\bar{o}$ (anc. Naupac'tus), now called by the Greeks Epacto, \bar{e} - $p\check{a}k't\bar{o}$ or \bar{a} - $p\hat{a}k't\bar{o}$: chief town of the eparchy of the same name, province of Ætolia-Acarnania, Greece; on the n. side of the Gulf of L., 25 m. e. of Missolonghi. The town, ill built, and of miserable appearance, is the seat of an abp., and has an excellent port. In the middle ages, it was given by the Greek emperors of the East to the Venetians, who fortified it so strongly, that 1477, it stood a siege of four months by 30,000 Turks, and was taken only in 1499 by Bajazet II., at the head of 150,000 men. Pop. of L. 2,600.—See Lepanto, Battle of.

LEPAN'TO, BATTLE OF: naval engagement in the Gulf of Lepanto (q.v.) 1571, Oct. 7; between Spain, Malta, Venice, Genoa, and the Papal States as allies, and the whole Turkish naval force. Don John of Austria (see JOHN OF AUSTRIA) commanded the Christian fleet composed of 208 galleys, beside a number of smaller vessels, carrying more than 20,000 Spanish, German, and Italian soldiers. This armada sailed from Messina 1571, Sep. 16, and Oct. 7 they reached the Gulf of Lepanto, where they found the Turkish fleet of somewhat superior force. The right of the Christians was under Doria, the Genoese admiral, the left under Barbarigo, the Venetian, and the centre under Don John in person. The centre of the Turks was under Ali Pasha, the commander-in-chief, the right under Sirocco, and the left under Ulutch Ali, dcy of Algiers. The fight began at noon and lasted more than four hours. The Turkish forces were utterly defcated, not more than 40 of their ships escaping about one-third of the whole number being burnt or sunk, and the remainder (except 40) captured. About 35,000 Turks were killed or captured, and 15,000 Christian galley-slaves were liberated. Ali Pasha was killed. The Christians' loss was 1,000 Romans, 2,000 Spaniards, and 4,600 Venctians. Cervantes, afterward author of Don Quixote, fought among the Spaniards as a common soldier, and had one hand crippled for life. This defeat was so great a blow to the Turks that thenceforward their power steadily declined. It was one of the dccisive historic struggles of the world, and inspired exultant joy throughout Christendom, and corresponding fear in the realms of Islam; but jealousy among the allies prevented its due results from being immediately secured.

LEPANTO-LEPIDODENDRON.

LEPAN'TO, GULF OF (also Gulf of Corinth): n. of the Isthmus of Corinth, n.e. of Morea, and s. of mainland of Greece; about 75 m. long from e. to w.; average width about 13 m. At two places the width is considerably more than 13 m., viz., where Salona Bay extends n. 8 m., and the Gulf of Corinth stretches s.e. Formerly it included the Gulf of Patras on the w., and was called the Gulf of Corinth. The Little Dardanelles, as the Straits of L. are often called, connect the Gulfs of L. and Patras, also the former with the Mediterranean. The gulf is surrounded by high mts., and its coast-line is very irregular, giving it the appearance of an inland lake.

LEPER, n. lep'er [Gr. and L. lepra, leprosy—from Gr. lepros, rough, scaly: It. lepra; F. lepre, leprosy]: one affected with leprosy. Leprosy, n. lep'ro-si, a disease of the skin characterized by the formation of whitish opaque scales (see Leprosy below). Leprous, a. -rus, affected with leprosy; covered with white scales. Lep'-rousness, n. -nes, state of being leprous. Lepra, n. lep'ra, in med., a skin disease, recognized in its simple state by circular patches, covered with small shining scales encircled by a dry red border. (see Lepra below).

LEPIDODENDRON, n. lep'i-dō-dĕn'drŏn [Gr. lepis or lepida, a scale; dendron, a tree]: in geol., genus of fossil plants, so called from the scale-like arrangement of the leaf-scars on their stems; abundant in the Coal-measures. Some species were of small size, but the greater number were large trees, 40 or 50 ft. long, and more than 4 ft. in diameter. They taper upward, and branch generally in a dichotomous manner. The surface is either covered



Lepidodendron.

with narrow, sharp-pointed, scale-like leaves, or marked with lozenge-shaped spaces—the scars of the fallen leaves—arranged in a spiral manner. The leaves which are found separated from, but associated with the trunks, have been placed in a provisional genus under the name

Lepidophyllum. The fruits are elongated, cylindric to bodies, composed of a conical axis, around which a great

quantity of scales are compactly imbricated.

Brogniart and J. D. Hooker consider that Lepidodendra are gigantic Lycopods. Their modern representatives would thus be a class of small, generally creeping, moss-like plants, the largest not more than three or four ft. high. In their form and in the structure of their fruit, they certainly approach them more nearly than any other living plants; Lindley, however, sees in the Coniferæ, and especially in the Norfolk Island pines, the closest resemblances to this ancient class of plants.

LEPIDOGANOID, n. lĕp'ĭ-dō-găn'oyd [Gr. lepis or lepĭda, a scale; ganos, splendor; eidos, appearance]: in geol., a sub-order of the ganoid or enamel-scaled fishes.

LEPIDOIDS, n. lĕp'ĭ-doydz [Gr. lepis or lepĭda, a scale; eidos, resemblance]: in geol., a family of ganoid fishes characterized by their strong, rhomboidal, bony scales.

LEPIDOLITE, n. *lĕ-pĭd'ō-līt* [Gr. *lepis* or *lepīda*, a scale; *lithos*, a stone]: a term applied to the fine pink-colored varieties of *mica* containing lithium.

LEPIDOMELANE, n. lĕp'ĭ-dŏm'ĕ-lān [Gr. lepis or lepida, a scale; melan, black]: a rare variety of mica of a raven-black color, found in granitic veins in small six-sided tables, or an aggregation of minute opaque scales.

LEPIDOPHYLLUM, n. lep'i-dō-fil'lum [Gr. lepis or lepida, a scale; phullon, a leaf]: in geol., small lanceolate leaves of the lepidodendron (q.v.), occurring abundantly in the shales of the Coal-measures.

LEPIDOPTER, n. lĕp'ĭ-dŏp-tėr, Lep'idop'tera, n. plu. -ter-ă [Gr. lepis or lepida, a scale; pteron, a wing]: the butterfly or moth kind, whose wings are covered with minute feathery-looking scales. Lep'idop'teral, a. -ter-al, or Lep'idop'terous, a. -ter-us, pertaining to the butterfly kind.—Lepidoptera is an order of insects, undergoing complete metamorphosis, having in their perfect state the mouth exclusively adapted for sucking, and further characterized by four membranous wings covered with minute, closely set scales. The order contains a vast number of species, abounding chiefly in warm climates; but the species of temperate regions are very numerous. The L. were divided by Linnæus into three great sections—Diurna, Crepuscularia, and Nocturna, so named because almost all those of the first section are seen on wing during the day only, those of the second more generally during the twilight, and those of the third are nocturnal; their popular designations respectively being Butterfiles, Hawk-moths, and Moths (see these titles). Among the L. are many of the largest and most beautiful insects, with colors exquisitely varied and brilliant; there are also many—particularly among the moths—of small size and sober hue, but not one of them can be denied the praise of beauty.

LEPIDOSIREN.

difference between the larvæ and the perfect insects in food, structure, and habits, is very wonderful. For the larvæ see Caterpillar; for the purpæ, see Chrysalis. The perfect insect feeds only on the nectareous juices of plants. The principal organs of the mouth are the maxillae, the mandibles and labrum being reduced to mere rudiments; and the maxillæ appear in the form of two long slender filaments, which combine to form a proboscis or trunk, spirally rolled up when not in use. This trunk is capable of great variety of movement, and is of extremely delicate structure.—The scales of the wings are of very various forms, but with general similarity: see Butterfly. The wings, generally large, are not folded when at rest. The three segments of the thorax are much united. The abdomen has neither sting nor ovipositor. None of the L. form societies, though great numbers are often found together. Silk is obtained from the eocoons of various species of moths: see Silk-worm.

LEPIDOSIREN, n. lĕp'ĭ-dō-sī'rĕn [Gr. lepis or lepĭda, a scale; seiren, a siren], (Protopterus): eel-shaped animal covered with rounded scales, inhabiting lakes in Africa which are liable to be dried up during the dry season—the most highly organized fish. It belongs to the Dipnoi, an order of fishes which present affinities to the Amphibia on the one hand, and to the Ganoids on the other: there are two living genera of Dipnoi—Lepidosiren and Ceratodus; the former genus contains two species—L. annectens found in the rivers of tropical Africa, and L. paradoxa, from S. America; there is but one species of Ceratodus, C. Forsteri; it inhabits Australia. As might be expected from the distribution of the living forms, this order of fishes is, geologically speaking, extremely aneient; e.g., in the old red sandstone the



Lepidosiren.

genera Dipterus and Ctenodus are found; and Traquair has shown that Holodus and Palædaphus, from the same formation, must be elassed with the Dipnoi. Ceratodus is known to have existed during the Triassic period, but no fossil remains of L. have been hitherto diseovered.

The skeleton is mainly eartilaginous; the notochord is persistent, as in many ganoids; the cranium is entirely cartilaginous, with the exception of the exoecipitals, but is protected by membrane bones. The respiratory apparatus consists of external (absent in Ceratodus) and internal gills, and the air-bladder, which in this order of fishes is modified to serve as a lung; it is sacculated within, and draws its blood supply from the

LEPIDOSTEUS-LEPIDUS.

two posterior aortic arches, which thus become, as in the higher types of vertebrata, true pulmonary arteries. In Ceratodus the single air-bladder is supplied with blood from the celiac artery as in most fishes; the ductus pneumaticus connects the air-bladder or lung with the esophagus. The air-bladder thus having become a lung, both Lepidosiren and Ceratodus are enabled to sustain a torpid existence during the dry season in mud, in which they form for themselves a kind of nest, so that specimens of L. annectens have sometimes been brought from Africa among the roots of plants. In confinement they do not require the annual period of torpidity. They readily eat animal food, and attack other fishes.

The heart has two auricles and a muscular conus arteriosus with longitudinal valves, resembling therefore the heart of the Amphibia; in Ceratodus there is but one auricle, and the valves of the conus arteriosus are like those of Ganoids; the longitudinal are also present, though rudimentary. The intestine has a spiral valve as in Ganoids and Elasmobranchs. See Nicholson, Handbook of Palæontology (Lond. 1881).

LEPIDOSTEUS, n. lĕp'ĭ-dŏs'tĕ-ŭs [Gr. lepis or lepĭda, a scale; os'tĕŏn, a bone]: the bony-pike, a genus of ganoid fishes, remarkable for their hard bony scales.

LEPIDOSTROBUS, n. lĕp'ĭ-dŏs'trō-bŭs [Gr. lepis or lepĭda, a scale; strobīlŏs, a fir-cone]: fossil cones or fruit of the lepidodendron, occurring abundantly throughout the Carboniferous formation.

LEPIDOTE, a. $l \not= p' \vec{\imath} - d \bar{o} t$, or Lepidoted, a. $l \not= p' \vec{\imath} - d \bar{o} - t \not= d$ [Gr. $l \not= p \not= d \bar{o} t \not= s$, covered with scales—from $l \not= s$, a scale]: in $b \not= s$. Lepidotus, n. $l \not= p' - t - d \bar{o}' t \not= s$, a fossil ganoid fish found in lias rocks.

LEPIDUS, lep'i-dus: illustrious Roman family of the ancient Amilian gens. It makes its first appearance in history about the beginning of the 3d c., B.C.; and was long one of the most distinguished in the patrician order, reckoning among its members many who had held the greatest dignities in the state. It disappears about the close of the 1st c. after Christ.-Marcus ÆMILIUS L. (d. B.C. 13), when war broke out (B.C. 49) between Cæsar and Pompey, declared for Cæsar. During his own absence in Spain, Cæsar made L. Dictator of Rome, and his colleague in the consulate (B.C. 46.) L. afterward supported Antony, and became one of the triumvirate with Octavianus and Antony; but his weakness of character, and lack of military talents and of statesmanship, made him of inferior importance to the other two, who assigned him Africa as his province (B.C. 40-39). After the defeat of Sextus Pompeius, he thought to have maintained himself in Sicily against Octavian, but his soldiers deserted him, and went over to his rival, who, however, allowed him to retain his wealth and the dignity of pontifex maximus.

LEPIS-LEPROSY.

LEPIS, n. lep'is [Gr. lepis, a scale]: a name applied to expansions of the epidermis in plants producing a scale or scurf whose surface is then said to be 'lepidote.'

LEPISMA, *lĕ-pĭs'ma*: genus of wingless insects, of ord. Thysanura (q.v.). The best-known species is L. saccharina, sometimes called Sugar Louse, because often found about old sugar barrels. All the species of L. and of the family Lepismidæ inhabit moist places, and feed on decaying vegetable substances.

LEPORINE, a. lĕp'ŏr-īn [L. leporīnus, like a hare—from lepus, a hare]: pertaining to a hare. Leporidæ, n. plu. lĕp-ŏr'ĭ-dē [Gr. idēs, signifying descent]: hares and rabbits, and the like; the Rodentĭa (sec Hare). Leporide, n. [Fr. word]: very prolific hybrid between the European hare and the rabbit; much esteemed for food.

LEPRA, lep'ra [see Leper]: scaly affection of the skin. These scales occur in circular patches of a gravish color, with a red, slightly elevated margin. If the scales fall off or are removed, the surface of the skin is red and shining, and new scales rapidly form. patches vary in size, being often about an inch in diameter, and sometimes much larger. Lcpra most usually occurs on the limbs, and especially on those parts where the bones are most thinly covered. Its duration is uncertain, and if not interrupted by treatment, it will frequently continue for years, without materially affecting the general health. It is not contagious. The local application of tar ointment, or the iodide of sulphur ointment, will sometimes remove it. If it does not yield to this treatment, small doses of Fowler's Arsenical Solution (three to five minims) may be prescribed, twice or thrice a day, either in water or in the decoction of dulcamara, supposed to be specially beneficial in chronic skin discases.

LEP'ROSY [see LEPER]: term very vaguely used by medical and other writers; here restricted to the Lepra tuberculosa, as it appears to have prevailed during the middle ages and till modern times in Europe, and as it is now seen in various warm climates; for the scaly variety, is in reality a separate disease: see Lepra. The affection here discussed is identical with the elephantiasis of the Greeks, and the lepra of the Arabians, while it is altogether different from the elephantiasis of the Arabians, and the lepra of the Greeks, which latter is the scaly lepra of our own day.

The most prominent symptoms of L. are summed up by Dr. Copland, Medical Dictionary, as follow: 'Dusky red or livid tubercles of various sizes on the face, ears, and extremities; thickened or rugosc state of the skin, a diminution of its sensibility, and falling off of the hair, excepting that of the scalp; hoarse, nasal, or lost voice; ozæna; ulcerations of the surface and extreme fætor.' These tubercles vary in size from that of a pea

to an olive. Of all parts, the face is particularly affected,

especially the nose and ears.

The L. of Iceland, described by Dr. (afterward Sir Henry) Holland and others, that of the Faröe and Shetland Islands, described by Dr. Edmonston and others, and that still seen in Africa, in the E. and W. Indies, and in many tropical islands, all are identical with the disease now described—the L. of the middle ages.

Closely allied to it, and often confounded with it, are:
1. The Lepra Anæsthesiaca of Winterbottom, Copland, and others, which is characterized by remarkable absence of sensibility of the general surface, by comparative smoothness of the skin, and ulceration and falling off of the fingers and toes. The cases recorded by Win-

terbottom and Copland were seen in Africa.

2. The Jewish Leprosy, regarding which nothing certain is known. The term L. (Berat, Hebrew) was probably applied by the priests to various cutaneous affections, particularly those which were chronic and contagious. 'It is probable,' says Dr. Copland, 'that frambæsia or the yaws (a tuberculous disease) was one of these, as well as other inveterate cutaneous maladies arising from the modes of living, the habits and circumstances of the Jews at that time, and of the Egyptians; and that these maladies have changed their characters, owing to changes in the nature and combinations of their exciting causes.'

Nothing certain is known regarding the causes of L. The investigations of Stewart at Tranquebar, where it is very prevalent, led him to conclude: 1. That women are less liable to it than men; 2. That it is hereditary; 3. That its contagiousness is extremely doubtful; 4. That a fish-diet renders every symptom worse; 5. That poor living, want of cleanliness, and exposure to cold and damp, are constant attendants. Dr. Copland ascribes its origin to the use of semiputrid meat and fish, and of rancid oils; to insufficient vegetable food; and to the contact of matter discharged from leprous sores.

The disease may continue many years without causing death. When it is far advanced, it is probably incurable, and even in the early stages, its cure is uncertain. Probably such alterative medicines as corrosive sublimate and arsenious acid in minute doses are most likely to be of service. Sulphur fumigating baths, and various medicated water-baths, have been recommended.

LEPROUS, etc.: see under LEPER.

LEPSIUS, lĕp'sē-ûs, KARL RICH: German Egyptologist: 1813, Dec. 20—1884, July; b. Naumburg; son of an advocate and magistrate who was a zealous antiquary. The younger L. studied at Leipzig, Göttingen, Berlin, and Paris. His first work was Die Paläographie als Mittel der Sprachforschung (Berl. 1834), for which he obtained the Volney prize of the French Institute. This was followed by works on the most ancient alphabets and other kindred subjects. In 1836, he associated himself inti-

LEPTANDRA-LERICI.

mately with Bunsen at Rome, and eagerly prosecuted his favorite studies there. Between 1834 and 42, he published Lettre à M. Rosellini sur l'Alphabet hiéroglyphique (Rome), and a number of dissertations on the monuments of Egyptian art and their general architectural style. He published the remains of the ancient Etrurian and Oscan languages in his Inscriptiones Umbrica et Osca (Leip. 1841), and other works. In 1842, he was placed at the head of an antiquarian expedition sent to Egypt by the king of Prussia; and on his return was appointed ordinary prof. in Berlin. His Denkmäler aus Aegypten und Aethiopien (folio 1853-57), a magnificent work, was published at the expense of the king of Prussia. His Chronologie der Aegypter, and Ueber den ersten Aegypt. Goetterkreis, laid the foundation for a scientific treatment of earlier Egyptian history. Other works are his letters from Egypt, Ethiopia, and Sinai (1852); a communication on the Egyptian monuments (1853), the work in which he expounds the Standard Alphabet, a modified Roman alphabet for hitherto unwritten languages, now used in many cases (1855); a work on the Egyptian ell and other measures; the Königsbuch, a list of kings (1858); the Todtenbuch, the Egyptian Book of the Dead (1867). He wrote also on Chinese, Arabic, and Assyrian philology; was editor of the Berlin Zeitschrift of Egyptology; was a member of the Royal Acad.; and chief librarian of the Royal Library at Berlin. He was a creator of Egyptology as a scientific study, and a perfect type of a German professor.

LEPTANDRA, *lĕp-tăn'dra*: proposed generic name for *Veronica virginica*, or 'Calver's physic': see Speedwell.

LEPTOCAR'DIA: order of fishes: see Lancelet.

LEPTOSPERMUM, n. lĕp'tō-spēr'mŭm [Gr. leptos, slender; spermu, seed]: genus of trees and shrubs, natives of Australia, New Zealand, etc., of nat. ord. Myrtaceæ, subord. Leptospermeæ. They are evergreen, with leaves somewhat resembling those of myrtles. Some of them bear the name Tea-tree, as L. lenigerum, L. baccatum, L. flexuosum, and L. grandiflorum, because the leaves have been used as a substitute for tea. L. scoparium is sometimes called the New Zealand Tea-plant, sometimes the Broom-tree or Dogwood-tree. It is common in New Zealand and Australia.

LERCARA DE' FREDDI, *lĕr-kâ'râ dā frĕd'dē*: town of Sicily, 30 m. s.s.w. from Palermo. The people are mostly employed in sulphur mines. Pop. 10,000.

LERE, n. $l\bar{e}r$ [see Lore 1]: in Scot. and OE., learning: V. to learn; to teach. Ler'ing, imp. Lered, pp. $l\bar{e}rd.$

LERICI, ler'e-che: town and port of n. Italy, on the Gulf of Spezia, with lead-works. It is walled and protected by a castle. Pop. 3,500.

LÉRIDA—LERMONTOF.

LÉRIDA, lĕr'ē-dâ or lā'rē-thâ: province of n.e. Spain, in Catalonia, directly s. of France, and touching the Republic of Andorra; bounded e. by Gerona and Barcelona, s. by Tarragona, w. by Saragossa and Huesca; 4,772 sq. m. It is mountainous and well wooded, with physical features characteristic of the s. slope of the Pyrenees. The two highest peaks of the Pyrenees are in this province. The largest river is the Segre, crossing L. in a s.s.e. direction, afterward joining the Ebro. Becs and silkworms are largely raised; the soil is mostly fertile, producing grain, fruit, and many kinds of garden vegetables. The people chiefly engage in pastoral occupations. The principal minerals are iron, lead, zinc, copper, coal, granite, marble, gypsum, lime, and jasper. It has only one city whose pop. exceeds 5,000, this being Lérida, its cap, one the most important military posts in Spain. Pop. of province (1900) 274,590.

LÉRIDA, *lĕr'ē-dâ*: town of Spain, cap. of the province of L., on a tributary of the Ebro, about 100 m. w.n.w. of Barcelona. The town is a gloomy labyrinth of meanlooking streets, but has a castle and two cathedral churches. There are manufactures of woolen, cotton, leather, and glass. L. is probably the Celtiberian *Ilerda*. Near it, Scipio Africanus defeated Hanno and Cæsar, lieutenants of Pompey. A council was held at L. in 564.—Pop. 20,500.

LÉRINS, The, lā-răng': group of islands in the Mediterranean Sea, $2\frac{1}{2}$ m. off the s.e. coast of France, between capes Roux and Guaroupe, belonging to the dept. of Alpes-Maritimes. The two principal islands are: 1. St. Honorat (anc. Lerina), the smaller, but more attractive, containing ruins of the earliest abbey of the Gauls, founded by St. Honoratus, Abp. of Arles, once famous as the seat of St. Vincent de Lérins and of St. Hilary, and in the 5th c. the theological centre of Europe, but now inhabited only by a few monks; 2. Ste. Marguerite (anc. Leron), 2 m. long, opposite Cannes, 15 m. s.w. of Nice, favorite winter resort for invalids, but occupied in summer by only a garrison and fishermen. Here Napoleon landed when he escaped from Elba, 1815. In its old castle Monterey, now a state prison, the 'man in the iron mask' was confined, 1686–98, and Marshal Bazaine, 1873–4. In its monastery of Ste. Marguerite, Francis I. was imprisoned while on his way as a captive to Madrid.

LERMONTOF, *lĕr'mon-tof*, MIKHAIL YUREVITCH: the most distinguished of the Russian Byronic school of poets, next to Pushkin: 1814, Oct. 15—1841, July 27; descended from a Scottish immigrant called Learmonth. L. was an officer in the Russian Guard. He wrote admirable lyrics and poetical narratives (*The Novice*, *Ismail Bey*, *The Demon*, *Song of the Tsar Ivan*); and a novel, *The Hero of our Days*, in which a fellow-officer in the army in the Caucasus, deeming himself caricatured, challenged and shot him in a duel.

LERNEADA—LEROY DE SAINT ARNAUD.

LERNEADA, ler-ne'a-da: order of Crustacea, having the mouth formed for suction alone; in organization inferior to any of the other crustaceans, so that the genus Lernæa, from which the order derives its name, was placed even by Cuvier not among crustaceans, but Entozoa. The true relations of these creatures, however, were finally demonstrated by Von Nordmann. A remarkable fact is that, when young, they resemble the higher crustaceans much more than in their mature state; having then organs for swimming, which they are capable of doing with great agility, and eyes-or an eye as in Cyclops, to which they show much general resemblance; whereas, when mature, they are fixed to a single spot, as parasites on fishes, and are destitute both of eyes and of organs of locomotion. The number of the L. is very great, each kind of fish having apparently its own peculiar species of parasite. Some of them adhere to the eyes of fishes, which they render blind, some to the gills, some to other parts of the body. The ancients were acquainted with such parasites of the tunny and swordfish, and Aristotle mentions them as causing great annoyance to the fishes infested by them. The L. assume in a mature state various and grotesque forms.

LERO, $l\bar{a}'r\bar{o}$, or Leros, $l\bar{e}'ros$: island, one of the Sporades; in the Ægean Sea, off the s.w. coast of Asia Minor, near Caria; 9 m. long. Pop. 2,000.

LEROY, *lė-roy'*: village, Genesee co., N. Y., 50 m. e. of Buffalo, 25 m. s.w. of Rochester. It is on the N. Y. Central, the Erie and the State Line railroads. Ingham Univ. for women was here (1835-94); also an art conservatory and library. Pop. (1890) 2,743; (1900) 3,144.

LE ROY, le roy, WILLIAM EDGAR: 1817, Mar. 24—1888, Dec. 10; b. N. Y.: naval officer. He entered the U. S. navy as midshipman 1832, Jan. 11; was promoted passed midshipman 1838, lieut. 1843, commander 1861, capt. 1866, commodore 1870, and rear-admiral 1874, Apr. 5; and was retired 1880, Mar. 20. He served in the Princeton in the Mexican war; in the Keystone State at the capture of Fernandina, Fla. (1862), and in an engagement with Confederate iron-clads off Charleston (1863); in the Ossipee in the battle of Mobile Bay, where he received the surrender of the confederate ram Tennessee (1864); and commanded the S. Atlantic station 1876–78.

LEROY DE SAINT ARNAUD, leh-rwâ' deh săng târnō', Jacques: French marshal of the second empire: 1801, Aug. 20—1854, Sep. 29; b. Paris. He entered the army 1816, but found it necessary more than once to leave it, so that after 15 years he was only a lieutenant. In 1837, he was appointed capt. of the foreign legion, and first rose to eminence in the African wars. His valor at the siege of Constantine won the cross of the Legion of Honor. In 1840, he became a chef de bataillon; 1842, lieut.col.; 1844, col.; 1847, he was raised to the rank of field-marshal; 1851, gen. of division, At this period,

LERWICK-LE SAGE.

Louis Napoleon, plotting the overthrow of the republic, was seeking resolute and unscrupulous accomplices; and L. de St. A. was appointed to the command of the second division of the city forces. 1851, Oct. 26, he became war minister, and was active in the coup d'état of Dec. 2 and the subsequent massacres at the barricades. On the breaking out of the Crimean war 1854, he was intrusted with the command of the French forces, and cooperated with Lord Raglan in the battle of the Alma, Sep. 20. He died of disease nine days afterward.

LERWICK, *lėr'wik* or *lĕr'ik*: burgh of barony, chief town of the Shetland Islands; on the Mainland, on Bressay Sound, 110 m. n.e. of Kirkwall: see Shetland. L. has no regular streets, the only thoroughfares between the houses being badly kept and winding pathways. Among recent improvements are new water-works, reading-rooms, a handsome town-hall, and extensive harborworks, including iron and stone piers, and an esplanade. Pop. (1881) 4,045; (1891) 3,783.

LERY, $l\bar{a}$ - $r\bar{e}'$, Jean de: 1534–1611; b. Lery, France: first Prot. minister in America. In 1555, while a Calvinistic minister at Geneva, he was induced to accompany Villegagnon's expedition to Brazil to introduce the Reformed religion there; and for some time preached to the colonists on an island in the bay of Rio de Janeiro. On the failure of the colony he returned to France. In 1560 he was made a citizen of Geneva, and subsequently preached at Belleville, Nevers, and Saucerre. After the massacre of St. Bartholemew he settled in Berne, where he passed the remainder of his life. He published an account of the Brazilian enterprise (La Rochelle 1578).

LE SAGE, leh sâzh', Alain René: French dramatist and novelist: 1668, May 8—1747, Nov. 17; b. Sarzeau, now in the dept. of Morbihan. He studied under the Jesuits, and 1692, came to Paris to pursue philosophic and juristic studies, and to seek employment. His personal qualities attracted a lady of rank, who offered him her hand; but 1695, he married the daughter of a citizen of Paris. He turned from law to literature, and lived entirely by his literary labors, till the Abbé de Lyonne gave him a small pension of 600 livres. Some of his dramatic pieces attained great popularity; and 1709, he was offered, but refused, 100,000 francs to suppress one of them, Turcaret, a bitter satire on the financiers of the time. His comic novels, never excelled by anything of the same kind, won for him a still higher place in literature, particularly Le Diable Boiteux, Les Aventures de Guzman d'Alfarache (abridged translation from the Spanish of Aleman); and Gil Blas de Santillane (2 vols. Par. 1715), universally regarded as his master-piece. plete ed. of his works was published, Paris 1730. novels above named have been translated into different languages, and Gil Blas, in particular, is extremely popular.

LESBOS-LESLIE.

LES'BOS: ancient name of an island in the Grecian Archipelago, belonging to Turkey, called, during the middle ages, Mitylene (from its cap. city), hence by the modern Greeks, Mitylini, or Melino, and by the Turks Midilli. It lies 40 m. s.e. of Lemnos (q.v.), 10 m. from the coast of Asia Minor; area, about 600 sq. m. L. is rather mountainous, but only one of the mountains attains an elevation of 3,000 ft. The climate is salubrious beyond that of any other island in the Ægean, and the soil is fertile. Anciently, it was famous for its wines—Horace celebrates the innocentis pocula Lesbii—but the modern product is mediocre. Its figs are excellent; but its principal exports are oil, timber, and gall-nuts. The chief town is Castro (q.v.).—L. was the birthplace of Terpander, Arion, Alcæus, Sappho, Pittacus, Theophrastus, and Cratippus. Pop. abt. 40,000, of whom 15,000–18,000 are Turks, the rest Greeks.

LESION, n. le'zhŭn [F. lésion—from L. læstōnem, an injury—from læsus, hurt: It. lesione]: a hurt or hurting; an injury; a morbid alteration in a function or structure. In Scotch law, a term to denote injury or prejudice sustained by a minor or by a person of weak capacity, sufficient to be a ground of action to reduce or set aside the deed which caused the lesion: see Infant.

LESLIE, lez'li, Charles Robert, R.A.: distinguished artist: 1794, Oct. 19-1859, May 5; b. London, of American parents resident there at the time. They returned to America 1799, taking Charles Robert with them. His father died 1804, leaving the family in straitened circumstances. Young L. wished to be a painter; but his mother not having the means of giving him a painter's education he was bound apprentice to Messrs. Bradford and Inskeep, booksellers and publishers in Philadelphia. He had been three years at his apprenticeship, when he managed to execute a drawing of the popular actor, George Frederick Cook. The likeness having been pronounced excellent by a number of connoisseurs, a subscription was raised to enable the young artist to study painting two years in Europe. He accordingly returned to England 1811, and entered as a student in the Royal Acad. He seems at first to have attempted subjects in the classical style, with portraits; but by degrees he followed the bent of his genius and turned his attention to genre-painting of the highest class. The first picture that brought him into notice was Sir Roger de Coverley going to Church, exhibited in the Royal Acad. 1819. 1821 his picture of May-day in the Reign of Queen Elizabeth, secured his election as an associate of the Acad.; and Sancho Panza and the Duchess, painted for Lord Egremont, and exhibited 1824, his best work (of which there is a repetition in the National Gallery), obtained for him the rank of academician. After this, till near his death, there were few exhibitions of the Royal Acad. to which L. did not contribute. L.'s principal pictures are embodiments of scenes from the

works of many of the most popular authors—Shakes-peare, Cervantes, Le Sage, Molière, Addison, Sterne, Fielding, and Smollett. His works have had great influence on the English school; and though he almost always executed repetitions of his principal works—a practice that generally tends to decrease the value of pictures — his pictures bring immense prices. power of expression, and a delicate perception of female beauty, are leading points in L.'s pictures. In the early part of his career, his style may be objected to as deficient in color, and rather dry and hard; but the influence of Newton turned his attention to the Venetian masters, and led him to impart greater richness to his coloring. Later in life, the example of Constable inclined him to strive at producing empasto, or fulness of surface, in his pictures. L. accepted the appointment of prof. of drawing at the military acad. of West Point, N. Y.; but he gave up this occupation after a five months' residence, and returned to England. In 1848, he was elected prof. of painting at the Royal Acad., but resigned 1851. He died in London. His lectures were published 1845 under the title A Handbook for Young Painters—a most useful work. An excellently written life of his intimate friend and brother-artist, Constable, whose great talent he was the first fully to appreciate, was published by him 1845. The Autobiographical Recollections of L. were edited by Tom Taylor.

LESLIE, SIR JOHN: 1766, Apr. 16—1832, Nov. 3; b. Largo, Fifeshire, Scotland: natural philosopher. Showing strong bias for the exact sciences, he was sent to St. Andrews Univ. 1779. In 1785, he entered the Edinburgh Divinity Hall, but gave most of his time to the sciences, particularly chemistry. In 1788, he left Edinburgh, and after two years in America as tutor to the sons of a Virginian planter, he returned to London 1790, and till 1805 was tutor to the family of Mr. Wedgewood, at Etruria, Staffordshire, or was travelling on the continent, contributing to the press, and making experimental researches: the fruits of his labors were a translation of Buffon's Natural History of Birds (1793), the invention of a Differential Thermometer, a Hygrometer, and a Photometer, and the publication of Experimental Inquiry into the Nature and Propagation of Heat (1804), a most ingenious work, constituting an erain the history of that branch of physical science, and for which the Royal Soc. awarded him the Rumford medals. In 1805, March, he was, after a great deal of opposition from the Edinburgh clergy, elected prof. of mathematics in the Univ. of Edinburgh, and soon commenced the publication of his Course of Mathematics. In 1810 L. invented the process of artificial congelation, performed the experiment in the following year before the Royal Soc. of London, and 1813 published a full explanation of his views on the subject; subsequently, he discovered a mode of freezing mercury. In 1819 he was transferred to the

chair of nat. philosophy, a position better adapted to his peculiar genius; and 1823 published one volume of Elements of Natural Philosophy, never completed. 1832 he was created a knight of the Guelphic Order; and in that year he died at Coates, a small estate which he had purchased near Largo. Besides the instruments above mentioned, he invented an Æthrioscope, Pyroscope, and Atmometer, and contributed many articles to various periodicals on Heat, Light, Meteorology, the Theory of Compression, Electricity, Atmospheric Pressure, etc. His last important work was his discourse on the Progress of Mathematical and Physical Science during the Eighteenth Century, which constitutes the fifth dissertation in the first vol. of the Encyclopædia Britanica (7th and 8th ed.).

LES'LIE (or Les'LY, or Les'LEY), FAMILY OF: a Scottish historical house, whose first traces date 1171-99, when David, Earl of Huntingdon and the Garioch, brother of King William the Lion, granted a charter to Malcolm, son of Bartholf, of the land of Lesslyn (now written Leslie), a wild pastoral parish in Aberdeenshire. Bartholf's descendants, taking their surname from their lands of Leslie, acquired large domains before the end of the 13th c., by marriages with the heiress of Rothes on the Spey, and with one of the co-heiresses of Abernethy on the Tay. Sir Andrew of L. appears as one of the magnates of Scotland 1320, and from this time the family figures in the history of the country.

EARLS AND DUKE OF ROTHES.—The family became ennobled 1457, when George of L., of Rothes, and of L. upon Leven (the family had transferred the name of its first possession in the Garioch to the lands of Fethkil, in Fife), was made Earl of Rothes and Lord Leslie. third earl was father of Norman L., Master of Rothes, chief actor in the murder of Cardinal Beaton. The fifth earl, though a man of dissolute life, was one of the His son, scarcely ablest of the Covenanting leaders. less able, though almost uneducated, became Lord Chancellor of Scotland 1667, and was created Duke of Rothes, Marquis of Ballinbreich, Earl of Leslie, etc. 1680. honors became extinct at his death without male issue The earldom of Rothes went to his eldest daughter, whose descendant, the present Countess of Rothes, is the 16th who has held the dignity.

Earls of Leven.—Before the family forsook its first seat in Aberdeenshire, it had thrown off branches, some of which still flourish there. The chief, that of Balguhain, has given birth by itself or by its off shoots to several men of mark, such as the learned John L., Bp. of Ross (1527-96), the devoted champion of Mary, Queen of Scots; Sir Alexander L. of Auchintoul, gen. in the Muscovite service, who died gov. of Smolensko 1663; and Charles L., chancellor of the diocese of Connor, author of a Short Method with the Deists, who d. 1732. Still more distinguished was Alexander L., soldie of fortune, who, bursting the trammels of illegitimate birth and a scanty education (he could write his name, but scarcely more), rose to be a field-marshal of Sweden under the great Gustavus Adolphus. He was recalled to Scotland 1639, to take the command of the Covenanting army; and 1641 was made Earl of Leven and Lord Balgony. He died 1661, leaving two grandchildren, the younger of whom married the Earl of Melville, and left a son, who became third Earl of Leven and second Earl of Melville. His descendant is now 12th Earl of Leven and 9th Earl of Melville.

LORDS LINDORES.—The second son of the fifth Earl of Rothes was created Lord Lindores 1600. The title has been dormant since the death of the seventh lord

1775.

Lords Newark.—David L., fifth son of the first Lord Lindores, served with distinction under Gustavus Adolphus of Sweden, and returning to Scotland, on the outbreak of the Great Civil War, was one of the leaders of the parliamentary army at Marston Moor, and surprised and routed Montrose at Philiphaugh. He was defeated by Cromwell at Dunbar 1650, and after 10 years' imprisonment in the Tower, was set at liberty at the Restoration. He was made Lord Newark 1661, and died 1682. The title has been dormant since the death of his great-grandson, the fourth lord, 1791.

Counts Leslie.—Walter L., younger son of the House of Balquhain, distinguished himself in the Austrian army, and 1637 was created a count of the empire, as reward for his services in the murder of Wallenstein. He died without issue 1667, when he was succeeded by his nephew, James, field-marshal in the Austrian service, who died 1694. The title became extinct 1844.

The history of the Leslies was written by Father William Aloysius L., younger brother of the second count, in a large and sumptuous folio published at Gratz 1692, with the title Laurus Lesliana Explicata. The Pedigree of the Family of Leslie of Balquhain was printed at Bakewell 1861, for private circulation. See Historical Records of the Family of Leslie, by Col. Leslie of Balquhain (Edinburgh, 1869).

LESS, a. less [It. lasso, faint: F. lasche, slack: O.Fris. lessa, less: Bav. lass; OE. lash, slack, loose—in all kinds of action, the idea of relaxation is identical with that of diminution: Icel. -lauss, less]: comp. of little; smaller; not so large or great: Add. not so much; in a smaller or lower degree: N. the inferior; a smaller portion. Lesser, a. less'ser, another comp. of little; smaller; inferior; in OE., Less for Unless. Note.—The postfix less, as in hopeless, fearless, is identical with Eng. loose, and thus connected with Ger. los, loose, free.

LESSEE, n. lĕs-sē' [from Lease, which see]: the person who receives or holds a lease. Les'sor, n. -sŏr, one who grants a lease.—See Landlord and Tenant.

LESSEN, v. les'n [from less]: to diminish; to reduce; to become less. Lessening, imp. les'ning. Lessened, pp. les'nd.—Syn. of 'lessen': to weaken; impair; abate; lower; decrease; degrade.

LESSEPS, lā-seps', Ferdinand de, Vicomte: 1805, Nov. 19—1894, Dec. 7: French diplomatist and engineer; b. Versailles. He entered the consular service, and held, office successively in Central America, Lisbon, Tangiers, Tunis, and Alexandria. When at Rome 1849, on an extraordinary mission, a change of policy with the home government, in which he could not concur, led him to abandon political life, after 29 years of diplomatic His attention was now occupied with the cultivation of a farm at Berry, and the study of the East and Egypt. In a lecture 1870, he said: 'It was after five years of study and of meditation in my closet, five years of investigation and of preparatory labors in the istlimus, and 11 years of execution, that we attained the end of our efforts.' See Suez: Suez Canal. L. started a kindred scheme 1880, the piercing of the Isthmus of Panama (q.v.) for a ship canal; and so influential and popular had he become, that for a time he received all the capital he called for, and became both financial and professional manager. He promised that the canal would be finished by 1889, and would not exceed \$220,000,000 in cost; but in 1888, Apr. he announced that the total debt of the canal company in stocks and bonds was \$357,-923,000, with fixed charges of \$20,000,000 per annum. In the Dec. following, the company defaulted in payment of interest, and 1889, May 7, abandoned the work. (See Interoceanic Ship Canal.) An investigation into the affairs of the Co. followed, showing the grossest mismanagement and a system of corrupting public officials and the press, without a parallel. In 1893, Feb. 14, L. and his son Charles were each sentenced to five years' imprisonment and a fine of 3,000 francs. The sentence was never enforced against L., and was set aside on technical grounds in Charles's case, after a few months in prison. In consideration of past services the Suez Canal Co. made him an allowance which kept him from want. The honors and decorations which were showered on him as a result of his earlier success were in striking contrast with the disastrous result of his last enterprise. See his Lettres, Journal, et Documents pour servir à l'histoire du Canal de Suez (1875); and History of the Suez Canal, transl. by H. D. Wolff (1876).

LESSER: see under Less.

LESSES, n. les'ez [F. laissées, dung of wild animals—from laisser, to leave]: the ordure or dung of the wild boar and wolf.

LESSING, les'ing, Gotthold Ephraim: illustrious German author and literary reformer; 1729, Jan. 22—1781, Jan. 22; b. Kamenz, in Saxon Upper Lusatia, where his father was a clergyman of the highest orthodox Lutherauschool. After spending tive years at a school in Meissen,

he went to the Univ. of Leipzig 1746, with the intention of studying theology. But he soon began to occupy himself with other matters, made the acquaintance of actors, contracted a great fondness for dramatic entertainments, and set about the composition of dramatic pieces and Anacreontic poems. This sort of life pained his severe relatives, who pronounced it 'sinful,' and for a short time L. went home; but it was his destiny to revive the national character of German literature; and after one or two small literary ventures at Leipzig, he went to Berlin 1750, where he commenced to publish, in conjunction with his friend Mylius, a quarterly, Beiträge zur Historie und Aufnahme des Theaters, which went to the length of only four numbers. About this time appeared his collection of little poems, Kleinigkeiten. After a brief residence at Wittenberg, in compliance, once more, with the wishes of his parents, he returned to Berlin 1753, and 1755 produced his Miss Sara Sampson, the first specimen of bourgeoisie tragedy in Germany, which, in spite of some hostile criticism, became very popular. L. now formed valuable literary friendships with Gleim, Ramler, Nicolai, Moses Mendelssohn, and others. In company with the last two, he started (1757) Bibliothek der Schönen Wissenschäften, the best literary journal of its time, and still valuable for its clear natural criticism; he also wrote Fabeln, Literaturbriefe, and miscellaneous articles on literature and æsthetics. tween 1760-65, he lived at Breslau as sec. to Gen. Tauenzien, gov. of Silesia. The year after his return to Berlin, he published his master-piece, the Laocoon, perhaps the finest and most classical treatise on æsthetic criticism in the German or any other language. In 1767, appeared Minna von Barnhelm, national drama, hardly less celebrated than the Laocoon; and 1768, Dramaturgie, which exercised a powerful influence on the controversy between the French and the English styles of dramatic art -i.e., between the artificial and the natural, between the conventional and the true, between shallow and pompous rhetoric, and genuine human emotion. In 1770, L. was appointed keeper of the Wolfenbüttel Library. Two years later appeared his Emilia Galotti; and 1774-78, the far-famed Wolfenbüttelsche Fragmente eines Ungenannten. These Wolfenbüttel Fragments are now known to have been the composition of Reimarus (q.v.), but the odium of their authorship fell at the time on L., and he was involved in much bitter controversy. In 1779, he published Nathan der Weise, dramatic exposition of his religious opinions (his friend Moses Mendelssohn is said to have been the original of Nathan); and 1780, Erziehung des Menschengeschlechts, which is the germ of Herder's and all later works on the Education of the Human Race. He died at Brunswick. L. is one of the greatest names in German literature. works seemly hardly equal to his fame, it is because he sacrificed his own genius for the sake of others. When he appeared, the literature of his country was corrupted and enslaved by French influences. The aim of L. was to reinvigorate and emancipate the national thought and taste; and the splendid outburst of national genius that followed, was in a large measure the result of his labors. See Sthar's Lessing (1859); Sime's Lessing, his Life and Works (1877); and Miss Zimmern's L. (1878).

LESSON, n. les'n [F. leçon, a lesson—from L. lectionem, a reading: comp. Ger. lesen, to read]: that which a pupil learns, repeats, or does at one time; the task, etc., set by the teacher for the pupil; a precept or doctring tanght; a portion of Scripture read at divine service; reproof; instruction derived from experience: V. in OE. to teach; to instruct.

LES'SON, in Liturgical Literature: portion of the church service appointed to be read, chiefly with a view to instruction and exhortation, not couched in the form of a prayer, nor, even when found in the mass or the com munion service, directly bearing on the consecration of the Eucharistic elements. The lessons of the Eucha ristic service in the Rom. Cath. Church are always take. from the books of the Old or New Testament (including the Apocrypha); but in some of the other services of the Roman, Greek, and Oriental churches, portions of the writings of the Fathers, lives of saints, and occasionally short narratives from church history, are employed. The very earliest notices which we have of the liturgical services of the first Christians, allude to the usage of reading portions of sacred Scripture publicly in the church. The practice existed among the Jews in their synagogues (Luke iv. 16), and the apostle Paul frequently alludes to its use also in Christian assemblies, in his epistles to the infant churches of Colossæ, Laodicea, and Thessalonica. It is even more circumstantially referred to by Tertullian (Apolog. c. 39; and again, Prescript. c. 36), and by Justin the Martyr in his Apology (1 Apol. n. 67). Our information regarding the liturgy of this early period is too scanty to enable us to say what order was followed, and what principles were adopted in selecting the portions of Scripture; but from the Fathers of the 4th and later centuries, it is plain that the selection was in some degree regulated by the seasons; and, at all events, that it was not left to the determination of each individual minister or church. In general the extracts seem so disposed as to present the several books of Scripture in succession; but at particular times, portions were chosen which seemed appropriate to these times. Thus, the lessons at and after Easter were the Gospel narratives of the Resurrection; between Easter and Pentecost, the Acts of the Apostles; in Lent, they were from Genesis and the other books of the Pentateuch; in Passion-tide, from the Book of Job. In the modern Greek Church, so strictly is this order observed, that the Sundays of certain periods are known by the names of the Evangelists read at that time-as

the first, second, or third 'Matthew-Sunday,' 'Mark-Sunday,' etc. In the Roman missal, the distribution of the Gospel lessons is regulated more by the subjects than by the authors; and in addition to the distribution according to time, there is another regulated by the nature of the festivals, or the special characteristics of the saints to whose offices they are appropriated. The time and the origin of this distribution are uncertain; but it is commonly ascribed, at least in part, to St. Jerome, and distinct traces of it are found in several writers of

the 5th and following centuries. In the service-books of the Rom. Cath. Church, the lessons of the missal are always from Holy Scripture; and they are, unless in a few exceptional cases, two in number, the first called (as being ordinarily from one of the Epistles of Paul, or the canonical epistles) the 'Epistle;' the other, the 'Gospel.' A second Gospel is commonly read, which is from Jn. i. The Epistle is taken either from the canonical epistles of the New Testament, or, less frequently, from one of the books of the Old Testament, including the Apocrypha (generally from Wisdom, Ecclesiastes, Ecclesiasticus, or Proverbs), but occasionally from the books of the Pentateuch and other historical books. On a few exceptional occasions, chiefly in Advent and Lent, or at the Quarter Tenses (as the Ember-days are named in the Roman Church calendar), more than one Epistle occurs. The distinction of the 'Epistle Lesson' and the 'Gospel Lesson' is at least as ancient as the time of St. Augustine (see Aug. Serm. 176). In the solemn or high mass, each of these lessons is chanted or recited by a separate minister—the Epistle by the sub-deacon, the Gospel by the deacon; the former being chanted at the right side, the latter at the left side of the altar. In the low mass, both are read by the priest; but the same difference of position in reciting them is observed by the single priest. Anciently, one or both were chanted from an elevated platform or pulpit called ambo, and in Gothic churches, from a gallery attached to the rood-screen. The recitation from the ambo is retained in the Ambrosian rite as still practiced in the Milan Cathedral. In the several Eastern rites, the lessons are more numerous than those corresponding to the Roman Epistle, being chosen from the Old Testament, from the Acts of the Apostles, from St. Paul's Epistles, and from the Catholic epistles. Gospel-lessons are, of course, from the four Evangelists. In the Greek Church, the former is read by the anagnostes or lector; the latter by the deacon. In the other Eastern churches, both are read by the deacon, with the exception of the Syrian Church, in which the Gospel is read, not by the deacon, but by the priest.

The 'lessons' of the Roman breviary are more varied. They occur only in matins, with the exception of a 'short lesson' in Prime and in Compline. The lessons of matins are sometimes three, sometimes nine in number,

according as the matins consist of one or of three 'nocturns.' See Breviary. When there are three nocturns, the lessons of the first are commonly from the Holy Scriptures, the books of which are so distributed throughout the seasons, that portions of every book shall be read during the year. The lessons of the second nocturn consist either of a narrative of the life of a saint, or of the circumstances of a festival, or of a sermon or other discourse from a holy Father; and those of the third are generally from a homily of one of the Fathers upon the Gospel appropriate to the festival. The 'short lessons' of Prime and Compline

consist of sentences from the Holy Scripture.

In the public and solemn offices, the lessons are chanted, the tones being reputed of ancient origin; and the chanting of the Gospel especially being accompanied with special marks of reverence for the word of God, as the incensation of the book of the Gospel, signing it with the sign of the cross, and the bearing of lights during the singing—a practice which was already ancient as early as the days of St. Jerome's controversy with Vigilantus. When the pope officiates solemnly, the Epistle and Gospel are chanted in Greek as well as in Latin, in order to denote the union of both the rites in one Catholic Church; and at the coronation of at least one of the popes (Alexander V.), the Gospel was sung

in Latin, Greek, and Hebrew.

In the Church of England and the Prot. Episc. Church in the United States, the term is used only of the portions of Scripture appointed to be read at morning and evening prayer, and at the burial of the dead. The enlargement of this part of the service formed a great feature of the Reformed liturgy, and was a return to the more ancient use, entire chapters being substituted for short selected passages. In the Anglican Book of Common Prayer, four lessons are appointed for every day, two at morning and two at evening prayer. The first lesson, at each service, is taken from the Old Testament -which is read through, in course, once a year (the order of the books being departed from only in the reservation of Isaiah for the season of Advent)—and from certain books of the Apocrypha, viz., Tobit, Judith, Wisdom, Ecclesiasticus, Baruch, and the histories of Susanna and of Bel and the Dragon, which are read for the reasons quoted from St. Jerome, in the Sixth Article of Religion, viz., 'for example of life and instruction of manners,' but not 'to establish any doctrine.' The second lessons are from the New Testament, which is read through three times in the year—that in the morning from the Gospels and Acts of the Apostles, that in the evening from the Epistles. 'Proper,' i.e., special first lessons, are appointed for all Sundays and holidays: those for Sundays were fixed at the restoration of the Reformed liturgy under Elizabeth, and consist of chapters selected from the various books, so arranged as to

follow the seasons of the church-e.g., those during Advent are taken from Isaiah, those from Septuagesima to Easter from Genesis and Exodus, so that the account of the institution of the Passover, and the going out from Egypt, falls on Easter Day. The general purpose of the Sunday proper lessons, seems to be that of representing the divine dealings with the church of the Old Testament. The first lessons, on the minor holy-days, are taken, in course, from the didactic books of the Old Testament and Apocrypha. Except on the chief festivals, there are no proper second lessons, the New Testament being ordinarily read through, in course, on Sundays and week-days, so causing the fixed first lesson to combine with the varying second lesson, in a manner which sometimes throws much light on both. Parts of Leviticus and Joshua, and the two books of Chronicles, are omitted; and the Apocalypse is resorted to, only to supply the second lessons for the feast of St. John the Evangelist, and at evening service on All Saints' Day.— In the Prot. Episc. Church in the United States, the appointment of lessons is on the same general principles: the following alterations from the Anglican usage are noticeable: From Septuagesima to Easter, passages from the prophets, or of a penitential character are read: thence to Witsunday, chapters adapted to the seasons; and from Trinity Sunday to the 22d Sunday after Trinity, parts of the Historical books. In the New Testament, special lessons are chosen for Sundays. sons for each service are ascertained by reference to a calendar, prefixed to the Book of Common Prayer—the proper lessons, which always supersede the others, being given in separate tables. When a lesson is directed to be read to any verse, it is always exclusive of that verse. The lessons are allowed to be read by persons not in holy orders, but are directed to be so read 'as may best be heard of all present.' Each lesson is followed by a canticle or psalm, after the manner of the old responsory, and on the principle that every revelation of the divine character and dealings affords fresh material for His praise.

LESSOR: see under Lessee.

LEST, conj. *lĕst* [AS. *læs*, lest; *the læs*, the less, lest: really a corruption of AS. *les-the*, less-that]: for fear that; that not.

LET, v. let [AS. latan, to let, to suffer: Ger. lassen, to permit, to let: Icel. láta; Dut. laten; Goth. leten, to permit, to let go]: to allow, suffer, or permit; to grant to a tenant; to put to hire; to give power or leave to; to lease. Let'ting, imp. Let, pt. and pp. let. To let alone, to suffer to remain. To let be, to leave off; to discontinue; to let go. To let a-be, in Scot., to let alone; not to annoy or vex. To let blood, to free it from its confinement; to suffer it to flow out of the vein. To let down, to lower; to permit to sink. To let drive or fly, to send forth or discharge with violence.

as a stone. To LET IN, to allow to enter; to insert, as a piece of wood. To LET INTO, to give admission; to make acquainted with. To LET LOOSE, to free from restraint. To LET OFF, to discharge, as an arrow or gun; to release, as from an engagement; to suffer to escape. To LET ON, in Scot., to seem to observe a thing; to mention a thing; to hint. To LET OUT, to suffer to escape; to give to hire or farm; to reveal as a secret: see note under LET 2.

LET, v. let [AS. lettan; Dut. letten, to delay, to hinder: Icel. latr, lazy: Icel. letja; Goth. latjan, to be late, to tarry: Bav. letzen, to retard—from laz, late (see Let 1)]: in OE., to impede; to obstruct; to hinder; to delay or omit to do; in the sense of 'obstruction,' used as a noun, in the phrase, 'without let or hindrance.' Sore Let, in OE., grievously prevented or hindered. No Let of Lending, in OE., no hindrance of lending. Note.—The idea of 'slackening' lies at the root of both applications of the term let; when we speak of 'letting one go,' 'letting him do something,' we conceive him as previously restrained by a band, the loosening or slackening of which will permit the execution of the act in question—see Wedgwood.

LETCH, n. lech [L. lix, ashes: AS. leah; Ger. lauge, an infusion of the salts of ashes]: a quantity of woodashes through which water is made to pass in order to be saturated with the alkali among them; a tub or vat in which to make lye by causing water to pass through wood-ashes: V. to wash, as ashes, to separate the alkali. Letch'ing, imp. Letched, pp. lecht.

LETHAL, a. lē'thăl [L. lethālis, mortal—from lethum, death—from Gr. lēthē, oblivion]: deadly; mortal; fatal. A LETHAL WEAPON, a dagger, a revolver, or the like: in Scotch criminal law, a deadly weapon by which a death was caused.

LETHARGY, n. lěth'âr-jǐ [F. léthargie—from L. and Gr. lethar'giă, drowsiness—from Gr. lēthē, forgetfulness; argos, idle]: heavy unnatural slumber; morbid drowsiness; dulness; inattention; inaction. Lethargic, a. lē-thâr'jīk, or Lethar'gical, a. -jī-kāl, preternaturally sleepy; very drowsy. Lethar'gically, ad. -lī.—Syn. of 'lethargic:' drowsy; sleepy; heavy; dull.

LETHE, n. lē'thē [Gr. lēthē, forgetfulness]: in anc. myth., one of the rivers of Hades, whose waters, when drunk, caused forgetfulness of the past; oblivion. Lethean, a. lē-thē'ăn, of or pertaining to Lethe.—The theory was that souls were to drink of Lethe before passing into the Elysian fields, that they might lose all recollection of earthly sorrows.

LE'TO: see LATONA.

LETON, n. lē'ton: see LATTEN.

LETTER, n. lět'tér [F. lettre, a letter—from litéră, a letter—from L. litus, besmeared, as being scrawled or smeared on parchment and not engraved: It. lettera, a letter]: a mark or character representing a sound or an element of speech (see Letters and Articulate Sounds): a written or printed message; an epistle; a character formed of metal or wood, used in printing books (see Letters, Relative Frequency, etc.): V. to stamp or mark with letters. Let'Tering, imp.: N. the act of impressing letters; the letters impressed. Let'tered, pp. -tėrd: Adj. educated. Let'terer, n-ėr, one who impresses letters. Let'ters, n. plu. -tėrz, learning. Letter-box, a box in which letters are deposited. LETTER-CARRIER, a postman who delivers letters. Letter-case, a box or case for letters. Letter-PAPER, paper for writing letters on. Letterpress, printed matter from type. LETTER-WRITER, one who writes letters for others, a common profession in India and Turkey; a machine for copying letters; a book containing directions for letter-writing. A DEAD LETTER, a term used at the post-office for a letter addressed to a person who cannot be found, or who is dead; that which has lost its force or authority, generally by lapse of time; that which has fallen into disuse or become ineffective, as the law has become a dead letter. THE LETTER, the literal meaning; the bare meaning as conveyed by the words without any reference to the real or intended meaning, as the letter of the law and not its spirit. Letter missive, in Congl. Church usage (see Council, in Congl. usage). Letters of adminis-TRATION, the instrument by which one is authorized to administer the goods and estate of an intestate deceased person (see Administration: Will: Intestacy). Let-TER OF ADVICE, a letter giving notice of a transaction. LETTER OF POWER OF ATTORNEY, a legal writing by which one person authorizes another to act in his stead. LETTER OF CREDIT, a letter given by a bank or other person, authorizing the bearer to receive a specified sum of money at some distant place. Letter of license, a customs permit; permission or privilege granted as by creditors to an insolvent trader, to go on with his business under surveillance. Letters of Marque, permission or license given by government to a private ship in time of war to seize on the ships of another state; so called because the sovereign allowed a market or mart. i.e., authorized the disposal of the captured property. It is piracy for a private vessel to make war without letters of marque. Privateering under such letters was abolished by the European nations by the treaty of LETTERS OF SAFE CONDUCT, a writ to a citizen of another state which is at war with the state issuing the writ, authorizing him to travel or deal in the state whose govt. issues the writ; such writ protects him and his goods from seizure. LETTERS PATENT, a written document granted by government, authorizing a per-

LETTERS:

son to do some act or enjoy some right, to the exclusion of others—or in Britain creating a peer, etc. (see PATENT). LETTERS ROGATORY, instrument sent by a judge from a court to a court in another jurisdiction, requesting such court to cause certain named witnesses to be examined and their depositions to be returned to the court issuing the letters; such letters are occasionally issued from admiralty courts. Letters testamentary, a legal instrument granted to an executor after probate of a will, authorizing him to act (see Executor: Probate Court). Lettered-tortoise, in zoöl., Emys scripta, a terrapin very common in N. America. Generally it is dark brown above, and the edges of the carapace are boldly scribbled with broad scarlet marks, something like the letters of some strange language. Below it is yellow; the head is yellow and black.

LETTERS, RELATIVE FREQUENCY IN Use of: proportionate use of the various letters in the English alphabet, as shown by the experience of printers.

	GENERAL USE.							
e 1,000 t 770 a 728 i 704 s 680 o 672 n 670	h 540 f 236 r 528 w 190 d 392 y 184 l 360 p 168 u 296 g 168 c 280 v 158 m 272 b 120	j 55 q 50 x 46 z 22						
USE AS INITIAL LETTERS.								
S 1,194 C 937 P 804 A 574 T 571 D 505 B 463	M 439 W 272 F 388 G 266 I 377 U 228 E 340 O 206 H 308 V 172 L 298 N 153 R 291 J 69	K 47 Y 23 Z 18 X 4						

LETTERS AND ARTICULATE SOUNDS: elements of language—written and spoken. Letters are conventional marks or visible signs of the elemental sounds of spoken language. The earliest symbols of sounds represented syllables rather than simple sounds (see Alphabet: Hieroglyphics: Chinese Language). It was only gradually that syllables were reduced to their ultimate elements, and all alphabets yet bear marks of their syllabary origin (see letter K), displaying various imperfections either of excess or of defect.

Articulate sounds are divided into vowels and consonants; and the latter are subarviāed into voiceless and vocal elements (otherwise called 'sharps' and 'flats'), obstructive and continuous elements (otherwise called

'mu'es' and 'semi-vowels'), and liquids. Many other divisions have been proposed, but the above classification embraces all real varieties. The elemental sounds are classified also according to the organs which form them, as labials, linguals, gutturals, nasals, etc. A physiological description of the articulate sounds used in English speech, shows the necessary extent of a perfect system of letters, and the deficiencies of the present alphabet.

All the elements of speech are susceptible of separate formation; and in the following description, reference is always intended to the exact sound of each element, and

not to the name of its letter.

Emitted breath mechanically modified forms every The breath is modified first in the articulate sound. throat, by a certain amount of constriction in the larynx, without which restraint, the air would flow out noiselessly, as in ordinary breathing, or gushingly, as in sighing. The breath is thus economized into a steady stream, and rendered audible by the degree of roughness or 'asperation' that it acquires when forced through a narrow aperture. This 'asperated' current of air, when articulated, forms whispered speech. In passing through the arynx, the breath is acted on further by the opposing ligaments of the glottis (the aperture of the larynx), and sonorous voice is produced. The vocalized or asperated breath then receives vowel and articulate modification in its passage through the mouth. When the mouth is sufficiently open to allow the breath to flow without obstruction or oral asperation, the air is molded into the various qualities of vowel-sound; and when the channel of the mouth is obstructed, or narrowed so much as to cause a degree short of asperation of the breath between the tongue and the palate, the lips, etc., consonant-sounds are produced.

The upper part of the mouth is an immovable arch; all variations in the shape of the oral passage are consequently effected by the tongue and the lips. [A nasal variety of vowel-sounds occurs in French—represented by n after the vowel-letters. These sounds are formed by depressing the soft palate, which otherwise covers the inner end of the nostrils, and allowing part of the breath to pass through the nose, while the remainder is modi-

fied in the usual way.

Vowels.—When the tongue is raised in its greatest convexity toward the roof of the mouth, but without being so close as to roughen or asperate the breath, the resulting vowel quality is that heard in the word eel; and progressively less degrees of elevation produce a series of lingual vowels, of which Ah is the most flattened—the lips being equally expanded throughout the series to allow the breath to escape without labial modification.

When the aperture of the lips is contracted in the greatest degree short of asperating the breath, the resulting

vowel-quality is that heard in the word ooze; and progressively less degrees of labial contraction form a series of labial vowels, of which Aw is the most open—the tongue being retracted throughout the series, to direct the breath without lingual modification forward against the lips.

A third series of vowels is formed by combining elevated positions of the tongue and contracted positions of the lips, or retracted positions of the tongue, and expanded positions of the lips. Of this labio-lingual series, the German ü is the most contracted, and the English

sound heard in the word err the most open.

The following table shows the principal vowels of each class:

C)					Lingual.	Labio-Lingual.	Labial.
Close,			•	•	ee(l)	u	00(ze)
Medial.					$\begin{cases} ai(l) \\ e(re) \end{cases}$	\ eu	{ o(ld)
· .	~	_	Ť		3 2 7	10	(o (re)
Open,	•	•	•		ah	e(rr)	a(ll)

The possible modifications of the oral channel are endless and untraceably minute, as are the shades of vowel-quality heard in dialects, and among individual speakers. In English, there are altogether thirteen established varieties, as heard in the words eel, ill, ale, ell, an, ask, ah, err, up, all, ore, old, ooze. Besides these, which a perfect alphabet must represent, we have the diphthongal sounds heard in the words isle, owl, oil, and the asperated compound yoo—the sound of the letter u in use—which is often, but erroneously, supposed to be a diphthongal vowel.

The Aspirate H.—The letter H (see ASPIRATE) represents an expulsive breathing, modified by the form of the vocal element which follows it—as in he, hay, high, hoe, etc., in which the H will be observed to have the quality of \bar{e} , \bar{a} , \bar{o} , etc., but without the laryngeal contraction, and consequent asperation of the breath, which forms a

whispered, vowel.

Consonants.—When the tongue is raised convexly against the back of the palatal arch so as to stop the breath, the separation of the tongue from the roof or back of the mouth is accompanied by a percussive effect, represented in the English alphabet by C, K, and Q, and by G when the obstructed breath is vocalized. While the tongue is in this obstructive position, if the soft palate be depressed so as to uncover the inner end of the nostrils, the breath will pass through the nose. This, with vocalized breath, is the formation of the element represented in English, for lack of an alphabetic haracter, by the digraph ng.

[The percussive effect of K—G is slightly modified by the point at which the tongue leaves the palate before different vowels, as in the words key and caw; the consonant of the latter word being struck from the soft palate, and that of the former word further forward, from the hard palate. A peculiar Anglicism of pronunciation is derived from the substitution of the ar-

terior for the posterior formation of K-G in certain

words, as kind. card, guide. guard, girl, etc.

When the fore-part of the tongue is raised to the front of the palate, so as to stop the breath, the separation of the tongue is accompanied by the percussive effect represented by T, and by D when the obstructed breath is vocalized. The uncovering of the end of the nostrils while the tongue is in this obstructive position produces, with vocalized breath, the sound represented by N.

When the lips are brought in contact (the lower lip rising to join the upper lip), their separation from the obstructive position is accompanied by the percussive effect represented by P, and by B when the obstructed breath is vocalized. The uncovering of the nares while the lips are in contact, produces, with vocalized breath,

the sound represented by M.

The remaining consonants all are of the continuous or non-obstructive class; the organs of articulation being so placed as merely to narrow the apertures, central or lateral, through which the breath issues with a degree

of hissing or asperation.

The elevation of the base of the tongue so as to leave a narrow aperture between its centre and the back-part of the palate, forms, with vocalized breath, the sound of Y initial as in ye. The sound of y resembles that of the vowel ē, but with the contracted aperture and resulting oral asperation of the breath essential to a consonant. The same position with voiceless breath forms the German ch as in ich—an element heard in English as the sound of H before \bar{u} , as in hue. [The Scotch guttural heard in loch differs from this only in the more retracted position of the tongue, which is approximated to the soft instead of the hard palate. The same position with vocalized breath produces the soft Parisian burr. approximation of the concave root of the tongue to the fringe of the soft palate causes the uvula to flutter in the breath, and forms the rough Northumbrian burr.]

The elevation of the middle of the tongue toward the front of the palatal arch, with a narrow central passage for the breath, produces the element which, for lack of an alphabetic character, is represented by the digraph Sh; and the same position forms, with vocalized breath, the common element heard in pleasure, seizure, etc., but which has no appropriate literal symbol in English.

The approximation of the flattened point of the tongue to the front of the mouth, so as to leave a narrow central passage between the tongue and the upper gum, forms the sound represented by S; and by Z when the breath is

vocalized.

The elevation of the tip of the tongue toward the rim of the palatal arch causes a degree of vibration of the edge of the tongue, and consequent asperation of the breath, proportioned to the degree of elevation, which is the English sound of the letter R. [R final, or before a consonant, has little or no asperation, but has almost the

pure sonorousness of a vowel, as in err, earn, etc. The roughly trilled Scotch or Spanish R is formed by the quivering of the whole fore-part of the tongue as it is

laxly approximated to the palate.

The approximation of the lower to the upper lip, so as to leave a central aperture for the breath, produces, with vocalized breath, the sound of W initial, as in woo. The sound of w resembles that of the vowel oo, but with a more contracted aperture. The same position, with voiceless breath, forms the element represented, for lack of an alphabetic character, by the digraph Wh.

The remaining varieties of English articulate sounds are formed by forcing the breath through lateral aper-

tures, instead of one central aperture.

When the fore-part of the tongue is spread against the front of the palate, and vocalized breath passes laterally over the middle of the tongue, the sound of L is heard. [The same position of the tongue forms, with voiceless breath, the sound of Ll in Welsh. The English L, as heard before \bar{u} (= yoo) is modified by convexity of the back-part of the tongue toward its position for Y, forming the sound represented in Smart's Dictionary by L', as in lure, pronounced l'oor. A peculiar Gaelic variety of L is formed by raising the back-part of the tongue to the soft palate, and passing the voice laterally over the root of the tongue.]

When the tip of the tongue is applied to the upper teeth (or the gum), and the breath is emitted laterally over the point of the tongue, the sound of the digraph Th as in thin is heard; and, with vocalized breath, the sound of Th in then—neither of which elements is rep-

resented in our alphabet.

When the middle of the lower lip is applied to the edge of the upper teeth, and the breath is emitted laterally between the teeth and the lip, the sound represented by **F** is produced; and, with vocalized breath, the sound of V

Liquids.—The voice is so little intercepted in passing through the nostrils (forming m, n, or ng), and through the wide apertures of L, and also of R when not initial in a syllable, that the sound has almost the pure sonorousness of a vowel; and these elements have received the name of Liquids, to designate their property of syllabically combining with voiceless consonants—seeming to flow into and to be absorbed by them, and losing much of their natural quantity as vocal sounds; as in lamp, temse, tent, sense, tenth, ink (= ingk), etc.; milk, spilt, help, self, else, Welsh, health, etc.; hark, heart, harp, serf, earth, harsh, horse, etc. The characteristic effect of the Liquids is perceived best by contrasting such words as temse and Thames, hence and hens, else and ells, curse and curs—in which the normal influence of vocal consonants on subsequent elements is manifested in the vocalizing of the sibilant in the second word of each pair.

From this review of the physiological varieties of

articulate sounds, it is evident that our alphabet of 26 letters is very imperfect, both by redundancy and deficiency. (1.) The same sounds are represented by more than one letter; as C, K, and Q; C and S; G and J. The same letter represents more than one sound; as C, which is sometimes K, and sometimes S; G, which is sometimes the vocalized form of K, and sometimes J; N, which is sometimes N, and sometimes ng; S, which is sometimes S, and sometimes Z; and Y, which is sometimes a consonant (when initial), and sometimes a vowel, sounded like the letter I. (3.) Single letters are used to represent articulate compounds; as G and J, which are sounded dzh [the voiceless form of J is represented by ch, as in chair], U, which is sounded you; and X, which is sounded ks, and sometimes gz. (4.) The alphabet contains no characters for six of our undoubted consonant elements—viz., Wh, Th(in), Th(en), Sh, Zh, Ng. (5.) Each yowel-letter represents many sounds; and the lack of seven characters to denote the excess of our vowel-sounds over the number of our vowel-letters, is supplied by about 60 combinations of two or of three letters, so that the original phonetic character of the alphabet is almost entirely lost in the confusion of our orthography.

Consonants form, as it were, the bare and bony skeleton of speech; vowels give definite shape and individuality to words. Thus the consonants sprt constitute the common skeleton of such diverse words as sport—spirt, sprat—sprite, spirit, support, separate, aspirate—asperate, which receive their distinct configuration and filling up from the vowel-sounds, which cover the consonant skeleton with molded elegance and variety. Consonants are thus the more stable elements of words, and their interchanges in the corresponding words of allied tongues are found to follow certain general laws dependent on the relations and affinities of letters: see Grimm's Law. These relations are exhibited in the following table:

	SHUT.			OP	EN.	NASAL.	
	Sh	arp.	Flat.	Sharp.	Flat.	Sharp.	Flat.
1. Labials,	•	p	b	$\begin{cases} f \\ wh \end{cases}$	v v	t	m
2. Linguals,	•	t	d	$\begin{cases} th \\ s \\ sh \\ * \end{cases}$	$egin{array}{c} dh \ z \ zh \ r \end{array}$		n
3. Gutturals,	•	k	g	\ \(\ll(\text{We} \) \(\chi \) \(\left(\text{loc} \) \(\chi \)	$egin{array}{ll} \mathrm{lsh} & l \ \mathrm{h}) & gh \ \mathrm{s}) & y \end{array}$		ng

In pronouncing the letters of the first class, the lips chiefly are concerned; in the second, the principal organ

^{*} The 'sharp' or voiceless r is of frequent but unrecognized occurrence. It is heard in French, as the sound of r final after a consonant, as in *theatre*: and in Scotch, as a substitute for thr, as in three, pronounced thee.

thoused thee.

† The 'sharp' forms of the nasals are in constant use as interjectional sounds, as in humph! (pronounced 'hm!) 'hn! (expressive of speering) and 'mhm! used in Scotland as an affirmative.

LETTER-WOOD—LETTRES DE CACHET.

is the tongue, or the tongue and the teeth (whence they are called also dentals); and in the third, the back parts of the tongue and palate are employed. But while all the sounds of each class have thus a common organic relation, the first pair differs from the other letters of the same class by being obstructive or shut—otherwise called Mute (q.v.); the remaining letters, having open apertures, are continuous or sibilant in effect—otherwise called Asperate (q.v.). The difference also between the members of the several pairs is of the same kind throughout; p differs from b as f does from v, or t from d, or sh from sh.

In Ellis's Plea for Phonetic Spelling, and Melville Bell's Principles of Speech, is presented a complete development of the theory of Articulate Sounds. Various attempts have been made to introduce a system of phonotypes, in which each sound should be represented by one invariable character. None of the schemes comes near in success to the system of Visible Speech (q.v.) published by Mellvile Bell some years ago.

LETTER-WOOD: one of the most beautiful productions of the vegetable kingdom; the heart-wood of a tree, found sparingly in the forests of British Guiana, the Piratinera Guianensis of Aublet, and the Brosimum Aubletii of Poeppig, belonging to the Bread-fruit family (Artocarpaceæ). It grows 60 to 70 ft. high, with diameter 2 to 3 ft. The outer layers of wood (alburnum) are white and hard; the central portion, or heart-wood, which rarely exceeds 7 inches in thickness, is extremely hard and heavy, and is of rich dark-brown color, most beautifully mottled with very deep brown, almost black spots, arranged with much greater regularity than is usually the case in the markings of wood, and bearing a slight resemblance to the thick letters of some old blackletter printing. Its scarcity and value make it an article of rare and limited application. It is used for fine veneer and inlaying work, and in Guiana for small articles of cabinet-work. The natives make bows of state of it, but are said to prefer a variety which is not mottled.

LET'TIC RACE . see LITHUANIA.

LETTISH, n. levish: the language of Lithuania, Courland, and Livonia; old Prussian. Lettic, a. lettik, of or pertaining to.

LETTRES DE CACHET, lĕt'r deh kăsh'ā: warrants of imprisonment issued by the kings of France before the Revolution. All royal letters (lettres royaux) were either lettres patentes or lettres de cachet. The former were open, signed by the king, and countersigned by a minister, and had the great seal of state appended. Of this kind were all ordinances, grants of privilege, etc. All letters-patent were registered, or enterinated, by the parliaments. But these checks on arbitrary power did not exist with regard to lettres de cachet, also called

lettres closes, or sealed letters, which were folded up and sealed with the king's little seal (cachet), and by which the royal pleasure was made known to individuals or to corporations, and the administration of justice was of-The use of lettres de cachet beten interfered with. came much more frequent after the accession of Louis XIV. than it had been before, and it was very common for persons to be arrested upon such warrant, and confined in the Bastile (q.v.), or some other state prison; where some of them remained for a very long time, and some for life, either because it was so intended, or, in other cases, because they were forgotten. The lieut.gen. of the police kept forms of letttes de cachet ready, in which it was only necessary to insert the name of the individual to be arrested. Sometimes an arrestment on lettres de cachet was a resource to shield criminals from

LETTUCE, n. let'tis [OF. laictuce; F. laitue—from L. lactūcă, a lettuce—from lac, milk: Ger. lattich], (Lactuca): genus of plants of nat. ord. Compositæ, sub-ord. Cichoraceæ, having small flowers with imbricated bracteæ, and all the corrollas ligulate, flatly compressed fruit, with a thread-like beak, and thread-like, soft, deciduous pappus.—Garden L. (L. Sativa) is supposed to be a native of the E. Indies, but is not known anywhere in a wild state, and from remote antiquity has been cultivated in Europe as an esculent, particularly as a salad. It has a leafy stem, oblong leaves, a spreading flattopped panicle, somewhat resembling a corymb, with yellow flowers, and a fruit without margin. It is now generally cultivated in all parts of the world where the climate admits of it; and there are many varieties, all of which may, however, be regarded as sub-varieties of the Coss L. and CABBAGE L., the former having the leaves more oblong and upright, requiring to be tied together for blanching—the latter with rounder leaves, which spread out nearer the ground, and afterward boll or roll together into a head like a small cabbage. L. is easy of digestion, gently laxative, and moderately nutritious, and is generally eaten raw with vinegar and oil, more rarely as a boiled vegetable. The white, and somewhat narcotic milky juice of this plant is inspissated, and used under the name of Lactucarium (q.v.), or Thridace, as an anodyne, sedative, opiate medicine. The best and most useful kind of this juice is obtained by making incisions in the flowering stems, and allowing the juice which flows to dry upon them. Lettuces are sown in gardens from time to time, that they may be obtained in good condition during the whole sum-In mild winters, they may be kept ready for planting out in spring.—The other species of this genus exhibit nothing of the bland quality of the garden lettuce.—The STRONG-SCENTED L. (L. virosa) is distinguished by the prickly keel of the leaves, and by a black, smooth seed, with a rather broad margin. Lactucarium

LEUCADIA-LEUCOCYTHÆMIA.

is prepared from its fresh-gathered leaves, in the flowering season. The leaves have a strong and nauseous, narcotic and opium-like smell.—*L. perennis* adorns with beautiful blue flowers the stony declivities of mountains and clefts of rocks in some parts of Germany, as in the Harz.

LEUCADIA, $l\bar{u}$ - $k\bar{a}'d\tilde{\iota}$ -a, mod. Gr. $l\check{e}f$ - $k\hat{a}$ - $th\check{e}'\hat{a}$: ancient name of Santa Maura (q.v.).

LEUCH'TENBERG: see BEAUHARNAIS.

LEUCINE, n. lô'sĭn [Gr. leukos, white]: peculiar white substance obtained from muscular fibre and putrefying cheese; one of the class of bodies to which chemists apply the term amido-acids; substances in which one equivalent of the hydrogen of the radical of an acid is replaced by one equivalent of amidogen (NH₂). empirical formula for leucine is C₆H₁₃NO₂, while that of caproic acid (whose amido-acid it is) is C₆H₁₂O₂. It is obvious that if for one of these 12 equivalents of hydrogen one equivalent of amidogen is substituted, the latter formula becomes $C_6H_{11}(NH_2)O_2$, which contains the same equivalents as the formula C₆H₁₃NO₂, but indicates more closely their mode of grouping. Leucine is of great importance in physiological chemistry, being a constituent of most of the glandular juices of the body. Considering the sources from which it is obtained artificially, there can be no doubt that the leucine found in the body is one of the numerous products of the regressive metamorphosis of the nitrogenous tissues. Leucite, n. lô'sīt, a white mineral found among volcanic productions, known as 'white spar' and 'white garnet'; a silicate of alumina and potash. Leucit'ic, a. -sit'ik, containing leucite.

LEUCIPPUS, $l\bar{u}$ -sĭp'ŭs: founder of the Atomistic School of Grecian philosophy, and forerunner of Democritus (q.v.). This is gleaned from notices of him in Aristotle; but nothing is known concerning him, neither the time nor the place of his birth, nor the circumstances of his life.

LEUCISCUS, *lū-sĭs'kŭs*: genus of fresh-water fishes, of family *Cyprinidæ*, containing a great number of species, among which are the Roach, Ide, Dace, Graining, Chub, Red-eye, Minnow, etc. There are no barbels. The anal and dorsal fins are destitute of strong rays.

LEUCOCYTHÆMIA, n. lô'kō-sī-thē'mĭ-ă [Gr. leukos, white; kutos, a cell; haima, blood]: in med., disease in which the number of white corpuscles in the blood appears to be greatly increased, while there is simultaneous diminution of the red corpuscles. The disease was noticed almost at the same time (1850) by Bennett of Edinburgh and Virchow of Würzburg; the former giving it the name standing at the beginning of the article, while the latter gave it the less expressive name of Leukæmia, or White Blood.

The increase of the white or colorless corpuscles seems

LEUCODERMA-LEUCOPYRITE.

to be always accompanied, and probably preceded, by other morbid complications, of which the most frequent are enlargement of the spleen, of the liver, and of the lymphatic glands. In 19 cases, it was found that enlargement of the spleen was present in 16, enlargement of the liver in 13, and enlargement of the lymphatics in 11 instances. Hence, tumefaction of the abdomen is one of the most prominent symptoms.

The microscopie examination of a single drop of blood is sufficient to determine the nature of the disease. The causes of leucocythæmia are unknown; and though the most varied remedies have been tried, the disease is

almost invariably fatal.

LEUCODERMA, n. lô'kō-der'mă [Gr. leukos, white; derma, skin]: a disease characterized by a mere discoloration of the skin, giving rise to no other symptoms.

LEUCOL, n. lô'kŏl, or Leucoline, n. lô'kŏ-lĭn [Gr. leukos, white; L. olĕŭm, oil], (called sometimes Quinoline): (C9H7N); one of the compounds obtained by distillation of coal-tar. It is called sometimes Quinoline, and is obtained by the distillation also of quinine, einchonine, or strychnine with potash. It is a colorless and strongly refracting oil, which boils at about 460°, has specific gravity 1.081, is insoluble in water, is soluble in alcohol and ether, and neutralizes acids, forming crystallizable salts with them. On boiling two parts of L. with three of iodide of amyl, crystals are obtained, which, when dissolved in water, treated with an excess of ammonia, and boiled for some time, yield a resinous substance, readily soluble in alcohol, and furnishing a splendid blue dye.

LEUCOMA, lô-kō'ma, [from Gr. leukos, white]: white opacity of the eornea—the transparent front of the Eye (q.v.). It is the result of acute inflammation, giving rise to the deposition of coagulable lymph on the surface, or between the layers of the cornea. It is sometimes reabsorbed on the cessation of the inflammation, and the eornea recovers its transparency; but in many cases it is persistent and incurable.

LEUCOPHLEGMATIC, a. lô'kō-flĕg-măt'ĭk [Gr. leukos, white; phlegma, phlegm]: in med., showing a tendency to dropsy. Leu'cophlegma'sia, n. -mā'sĭ-ā, a dropsical habit of body, characterized by paleness and flabbiness, with an excess of serum in the blood.

LEUCOPHYLL, n. lo'kō-fil [Gr. leukos, white; phullon, a leaf]: in bot., a eolorless substance in parts of plants capable of becoming green, converted into chlorophyl by contact with oxygen.

LEUCOPYRITE, n. lô-kŏp'ĭ-rīt [Gr. leukos, white, and Eng. pyrites]: a mineral of a color between white and steel-gray, with a metallic lustre, employed for the production of white arsenic, and also of artificial orpiment.

LEUCORRHEA-LEUTSCHAU.

LEUCORRHEA, n., or Leucorrhea, lô/kō-rē/ă [Gr. leukos, white: rheō, I flow]: a female ailment; the whites, in which the most prominent symptom is the discharge of a glairy fluid, often in eonsiderable quantity. For the special character of this complaint, see medical treatises. Its general treatment consists in fomentations, applications of emollients, and administration of tonics and astringents.

LEUCO'THEA: see Ino.

LEUCTRA, $l\bar{u}k'tra$: anciently, a village of Bœotia, in Greece, famous for the great victory which the Thebans under Epaminondas (q.v.). won over the Spartan king Cleombrotus B.C. 371, in consequence of which the influence which had been exercised by Sparta for centuries over the whole of Greece was broken for ever.

LEUK, loyk: small town in the eanton of Valais, Switzerland, on the right bank of the Rhone, 15 m. above Sion pop. about 1,200. It is noted in association with the Baths of Leuk, 8 m. northward at the head of the valley of the Dala and the foot of the ascent over the Gemmi pass. At the Baths of L. 4,500 ft. above the sea, there is a hamlet of 600 inhabitants, and several lodging-houses and hotels for patients and travellers. The springs have a high temperature (120° F.), are slightly saline, chalybeate, and sulphureous and are used both for drinking and for bathing. They are useful chiefly in diseases of the skin; and one peculiarity is the length of time the patients remain in the baths—as long as 8 hours a day. For this purpose there are several apartments of 20 ft. square, in which as many as 15 or 20 persons of both sexes, elad in long woolen dresses, bathe in common; sitting up to their neeks in water, they beguile the time with eonversation, chess, reading the newspapers, etc. There appears to have been a bathing establishment here as early as the 12th century.

LEUKÆMIA, or LEUKEMIA, n. lô-kē'mĭ-ă [Gr. leukos, white; haima, blood]: a morbid condition of the blood, characterized by the presence in it of abundance of white corpuscles: also Leucocythæmia (q.v.), in same sense.

LEU'KAS: see AMAXICHI.

LEUTHEN, loy'ten: village of Prussia, in Lower Silesia, 9 m. w. of Breslau, notable for the victory, 1757, Dec. 5, of Frederick the Great, with 33,000 men, over the Austrians under Prinee Charles of Lorraine at the head of 92,000. The Austrians lost 7,000 killed and wounded, 21,500 prisoners, and 134 pieces of artillery; the Prussians 3,000 killed and wounded. The result was the reconquest of the greater part of Silesia by the Prussians.—Pop. 870.

LEUTSCHAU, loyt'show [Hung. Löcze]: town of Hungary, county of Zips, 126 m. n.e. from Pesth. L. has the oldest Lutheran college in Hungary. The inhabitants, three-eighths of whom are Protestants, are occupied

mostly in agriculture. A peculiar kind of mead made here has a large sale in Hungary and in Poland and Silesia. Pop. 6,600.

LEUTZE, loyt'seh, EMANUEL: 1816, May 24-1868, July 18; b. Gmünd, Würtemberg: painter. He was brought to the United States while an infant, and was educated in Philadelphia. He began his art career by painting portraits, but not meeting with sufficient encouragement, he turned to large figure pieces and produced Indian Gazing on the Setting Sun (1840). This procured him numerous orders, and 1841 he went to Düsseldorf and began studying with Lessing, subsequently visiting the great galleries of Italy. He applied himself to historical subjects connected with America, lived in Germany till 1859, and spent the remainder of his life in Washington and Philadelphia. His works include Columbus before the Council of Salamanca; Columbus in Chains; Landing of the Norseman in America; Washington Crossing the Delaware; Washington at Monmouth; Washington at the Battle of Monongahela; News from Lexington; Sergeant Jasper; Washington at Princeton; Settlement of Maryland by Lord Baltimore; and the great mural picture in the national capitol Westward the Star of Empire takes its Way.

LEUZE, *lėz:* town of Belgium, province of Hainault, 17 m. n.w. from Mons, on the right bank of the Dender, not many miles from its source. Dycing, bleaching, brewing, and distilling are carried on; also salt-refining and the expressing of oil. Woolen and cotton hosiery and lace are manufactured. Pop. (1880) about 6,100.

LE VAILLANT, leh vă-yŏng', François: traveller and ornithologist: 1753-1824, Nov. 22; b. Paramaribo, in Dutch Guiana, where his father, a rich French merchant, was French consul. When he was 10 years of age, his father returned to Europe, and settled at Metz. Le V. started as an explorer; and after great hindrances and difficulties, made two s. African excursions: the first, 1781, Dec.—1782, Apr., eastward, at no great distance from the coast, to the Great Fish river, whence he returned by a more northern route through mountainous regions; the second, 1783,84, northward from Cape Town as far as the He returned to France with a fine tropic of capricorn. collection of skins of birds for stuffing, and printed the accounts of his discoveries in nat. history. His books were speedily translated into English: they are spirited He published also Natural History of and interesting. the Birds of Africa (6 vols. 4to, Paris 1796-1812).

LEVANT, n. lĕ-vănt' [F. levant, the East, the Levant—from lever, to rise or raise—from L. levārē, to raise: It. levante, the East]: the eastern part of the Mediterranean Sea, or those countries washed by that part, especially the coasts of Asia Minor, Syria, and Egypt: sometimes in a wider sense including all the countries eastward from Italy as far as the Euphrates and the Nile: Adj.

LEVANT—LEVEL.

eastern; in geol., a term applied by Prof. Rogers to designate the fourth of the fifteen series into which he subdivides the Paleozoic strata of the Appalachian chain, the sunrise of the N. Amer. Paleozoics. Levant'er, n. -er, in the Mediterranean, a strong easterly wind. Levant'ine, a. -in, of or pertaining to the Levant. Note.—Levant and Ponent are old terms for east and west, and signify literally 'rising and setting,' with reference to the sun.

LEVANT, v. *lĕ-vănt'* [Sp. *levantar*, to raise: see above]: to run away without paying; to act as a levanter. Levant'ing, imp. Levant'ed, pp. Levant'er, n. -*ėr*, one who bets at a horse-race, and runs away without paying the bets when he loses.

LEV'ANT AND COUCH'ANT: phrase in English law applied to cattle which have strayed into another's lands, and have been so long there that they have lain down and slept there.

LEVARI FACIAS, $l\bar{e}$ - $v\bar{a}'r\bar{\imath}$ $f\bar{a}'sh\check{\imath}$ - $\check{a}s$, Writof, in English Law: writ of execution; practically superseded by the writ of Elegit (q.v.) as regards real estate, and Fieri Facias (q.v.) as regards personal estate.

LEVATOR, n. *lĕ-vā'tŏr* [L. *levātus*, raised—from *levārĕ*, to raise]: in *anat.*, a muscle which serves to raise some part, as the eyelids or lips; a surgical instrument for lifting up depressed parts of the skull.

LEVEE, n. levée—from lever, to raise or rise: L. levārĕ, to raise: original meaning being, the time to rise]: originally the ceremonious visits paid to distinguished persons in the morning; assembly of gentlemen received by a sovereign or prince, or their representative, on stated public occasions; a complimentary attendance of the public on a person in authority.—Levee in Great Britain is the state ceremonial of the sovereign receiving visits from those subjects whose position entitles them to that honor. By the usage of the court, a levee differs from a 'drawing-room' in this respect, that only gentlemen are present (excepting the chief ladies of the court), while at a 'drawing-room' both ladies and gentlemen appear. The name is owing to such receptions being originally held in the monarch's bedchamber at the hour of rising.

LEVÉE, $l\ddot{e}$ - $v\ddot{a}$ ': French name for an embankment (q.v.): also English Levee, $l\breve{e}v'\bar{e}$.

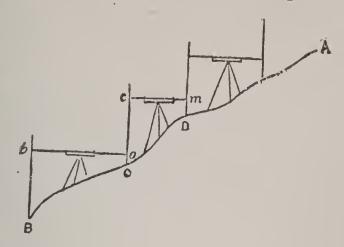
LEVEL, a. lev'el [OF. livel, a level: It. livella, a plummet—from L. libella, a level or line—dim. of libra, a level, a balance]: even; flat; in the same line; horizontal; even with something else; equal in rank or degree: N. a plane surface; a plain; state of equality; the usual height or elevation; standard; line of direction; an instrument employed by masons, carpenters, etc., to ascertain whether a surface is horizontal; an instrument employed in surveying to indicate the direction of a line

LEVELLING.

paranel with the plane of the horizon: V. to make even; to make horizontal; to lay flat; to bring to an equality; to point in taking aim; to aim, as a gun; to direct to an end; to direct, as remarks; to aim at; in OE., to conjecture; to make attempts; to accord; to square with. Lev'elling, imp.: Adj. making flat or even; reducing to an equality of eondition: N. the aet or art of reducing to a plane or flat surface; in surv., the art or operation of finding a horizontal line, or of ascertaining the differences of level between the various points in a survey (see Levelling, below). Levelled, pp. lev'eld: Adj. made even or flat; reduced to an equal state or condition; brought down. Lev'eller, n. -er, one who aims at redueing all persons and things to a common level: name of a party which arose in the army of the Long Parliament, but were severely dealt with by Cromwell. They, or some of them, demanded equality of ranks, titles, and estates, throughout the kingdom. One of their books however sets forth as their fundamental principles views mostly now incorporated in republican government. Lev'elness, n. -nës, evenness; equality of surface. To level up, to raise from a lower to a higher level; to place a lower on an equality with the higher thing. Spirit-level, instrument to ascertain whether a surface is horizontal: see Levelling, below.—Syn. of 'level, a.': equal; alike; uniform; smooth; horizontal.

LEV'ELLING: art or aet of finding a horizontal line, or of finding the difference of level between various points in a survey. Level is a term applied to surfaces that are parallel to that of still water, or perpendicular to the direction of the plumb-line; it is applied also to the instrument employed in determining the amount of variation from perfect levelness. The instrument is a cylindrical glass tube very slightly convex on one side, and so nearly filled with water, or, what is better, with alcohol (in the 'spirit-level'), that only a small bubble of air remains inside. The level is then mounted on a three or four legged stand, with its convex side upward, and by means of a pivot and elevating screws, is made eapable of assuming any required position. the level be properly constructed, the bubble should lie exactly in the middle of the tube when the instrument is properly adjusted, and, at the same time, the line of sight of the telescope attached to the level should be accurately parallel to the surface of still water. In ordinary levels, this first condition is seldom seen, and, instead, two notelies are made on the glass to mark the position of the two extremities of the bubble when the instrument is level. The tube and bubble should be of considerable length to insure accuracy. The leveller requires two assistants, each furnished with a pole 10 to 14 ft. high, and graduated to ft. and inches, or ft. and tenths of ft. If he wishes to measure the height of A above B, he may do this by beginning either at A or B. Let the latter be the case, then one assistant is placed

at B, holding his pole upright; the other is sent forward to C (which must be below the level of the top of the pole at B); the surveyor, who places himself between them, reads off the height Bb, which he puts down in



the back-sight column of his book, and then turns the level to C, reading off Co, which is entered in the frontsight column. The surveyor and his assistant at B then take up new positions, the latter at D; the back-sight Cc and the front-sight Dm are read off, and the process is repeated till one of the assistants reaches A. The excess of the sum of the back-sights over that of the front-sights gives the height of A above B. A little consideration shows that this method can hold true only when practiced at short range, with short distances between the levelling staffs. Otherwise as each line is tangent to the earth's surface at the place where the level stands the lines continually recede from the earth's surface. To be truly parallel thereto, the lines should be a curve; as this is impossible they should be so short as to be practically such collectively. This method carried out with due refinements and corrections is probably the most accurate known. In surveys of extensive areas when the curvature of the earth's surface has to be allowed for (see Geodesy), other methods are sometimes adopted. In trigonometrical surveying, the zenith distance of the distant point is determined. This is the angle between the vertical at the point of observation and the point in question. Its horizontal distance has also to be determined. As the radius of the earth at the given point is known, it is obvious that from these data the relative level of the two places can be calculated. Local attraction causing a deflection of the plumb-line. and atmospheric refraction, interfere with the accuracy of this method. The horizontal distance for the latter reason should not exceed 12 or 15 miles. Heights are often determined by the barometer, by taking readings at the different stations as nearly simultaneously as possible. If only one barometer is available, then intermediate readings should be adopted: see Atmosphere: BAROMETER. As the atmospheric pressure diminishes, the boiling point of water increases: this fact is used in

LEVEN-LÉVÊQUÉ.

determining mountain heights. An exceedingly delicate thermometer is suspended in a vessel over the surface of water which is caused to boil. The temperature of the steam evolved is observed, and gives the datum for determination of the height. The measurement of heights in geodesy is termed hypsometry. See Heights, Measurment of.

LEV'EN, EARLS OF: see LESLIE, FAMI_Y OF.

LEVEN, Locii, loch lev'en: beautiful sheet of water, of oval form, in the e. of Kinross-shire, Scotland; between 10 and 11 m. in circuit, and dotted with small islands; the chief of which are, St. Serf's Inch, at the e. end, 80 acres in extent, with the remains of a religious house of great antiquity (see Culdees); and another of 5 acres, opposite the town of Kinross, on which stand the ruins of Loch Leven Castle. The loch is supplied by several small streams, and empties by the Leven into the Firth of Forth. It has long been noted for the quantity, quality, and size of its trout. A pike was caught 1846 weighing 29 lbs. The rich color of the Loch L. trout is due to the abundance of a certain kind of crustacea upon which they feed.—Loch Leven Castle is connected with several events in Scottish history, the most noted being the imprisonment of Queen Mary 1567, June. Here she was forced to sign her abdication of the throne; and, after one unsuccessful attempt, succeeded, by the aid of George Douglas, the governor's brother, and of Willie Douglas, 'a foundling,' supposed to be a relative of the family, in effecting her escape, 1568, May 2.

LEVEN, LOCH, loch lev'en: arm of the sea, or rather of Loch Linnhe (q.v.) on the w. coast of Scotland, between Argyle and Inverness; about 11 m. in length by, on an average, less than one m. in breadth. It is remarkable for the wild grandeur of its scenery. The current produced in this loch by the ebb and flow of the tide runs at the rate of at least 4 m. an hour.

LÉVÊQUE, lā-věk', JEAN CHARLES: educator: b. Bordeaux, France, 1818, Aug. 7. He was educated in the college and normal school at Bordeaux; was prof. of philosophy in the colleges at Angoulême and Besancon 1841-47, the French School at Athens 1847-48, and at Toulouse and Nancy subsequently; became prof. of Greek and Latin philosophy in the College of France at Paris 1856; succeeded Barthélemy Saint-Hilaire 1861; was elected member of the French Acad. of Moral and Political Sciences, succeeding Prof. de Saisset, 1865; and was choson vice-pres. 1873. He has published numerous philosophical works, and received several prizes for them.

LÉVÊQUE, PIERRE: 1746-1814; b. Nantes, France: mathematician. He published a number of mathematical, nautical, and astronomical works, which were praised by the scholars of his day, notably *The Navigator's Guide* (1779), and was elected a member of the French Institute 1801.

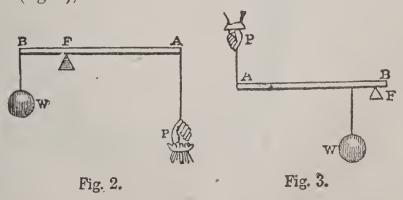
LEVER, n. lē'vėr [OF. leveur, a raiser or lifter: r. lévier, an instrument for raising weights—from lever, to raise—from L. levārē, to raise: levis, light]: a strong bar of iron or wood, turning on a support or propealled a fulcrum, used for raising weights; one of the mechanical powers. Leverage, n. lē'vėr-āj, the mechanical power gained by the use of the lever. Lever watch, a watch in which a vibrating lever is employed to connect the action of the escape-wheel with the action of the balance: see Watch.—The Lever is the most simple and common, but, at the same time, most important of the seven mechanical powers. It consists of an inflexible rod—straight or bent—supported at some point of its length on a propealled the fulcrum, and having the weight to be moved and the power to move it applied at other two points. In the accompanying illustration (fig. 1, a), AB is the lever, F the fulcrum, A and B the points

of application of P and W, the power (or pressure) and weight respectively. If the arms AF and BF be equal, the power P and the weight.

Fig. 1, a:

W also must be equal to produce equilibrium; if the arm of the power, AF, be longer than the arm of the weight, BF, then, to produce equilibrium, the power P must be less than the weight W, and vice versâ; if AF be double the length of BF, then P, to produce equilibrium, must be half of W; and, generally, as is shown in the elementary treatises on mechanics, the power and weight are in the inverse ratio of their distances from the fulcrum. This is equally true for straight or bent levers; but (fig. 1, b), the distance of the power and

the distance of the power and weight from the fulcrum is not, in all cases, the actual length of the arms, but the lengths of the power and weight. This principle holds good, whatever be the relative positions of the power, weight, and fulcrum; and as there can be three different arrangements of these, we thus obtain what are called 'the three kinds of levers.' The first kind, known as the 'common lever' (fig.2), is one in which the fulcrum is placed be-



tween the power and the weight; the Balance (q.v.), spade (when used for raising earth), see-saw, etc., arc examples

of this; and seissors and pincers are examples of doublelevers of the same kind. Levers of the second kind (fig. 3) are those in which the weight is between the power and fulcrum; examples of this are the crowbar, when used for pushing weights forward, the oar—the water being the fulcrum, and the row-lock the point of application of the weight—and the wheel-barrow; and of doublelevers of this kind nut-crackers are an example. In levers of the third kind (fig. 4) the power is between

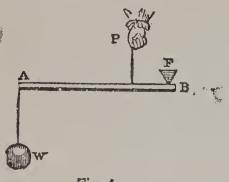


Fig. 4.

the weight and the fulcrum. Fishing-rods, whips, umbrellas, and most instruments used with the hand alone, are levers of the third kind, and shears, tongs, etc., are examples of double-levers of this class. It is evident that, to produce equilibrium in levers of the first kind, the power may, according to the ratio of the lengths of the

arm, be either greater or less than the weight; in the second kind, it must always be less; and in the third kind, always greater. This is expressed in technical phrase by saying that the first kind of lever gives a mechanical advantage or disadvantage (see Mechanical advantage, and the third always gives a mechanical advantage, and the third always a mechanical disadvantage. Levers of the second kind, having the same mechanical advantage, are, when worked by man, twice as powerful as those of the first kind, because in the one case he uses his muscular force as the power, in the other case only his weight. Levers of the third kind are used when velocity, or a large extent of motion, is required at the expense of power; consequently this form is frequent in the structure of the limbs of animals. The structure of the human arm (fig. 5) is a very good example; the fulcrum is the socket (C) of the elbow

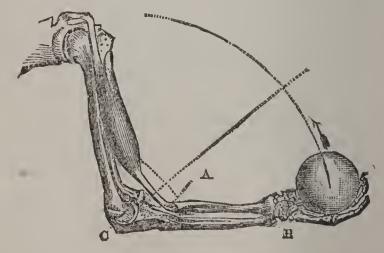


Fig. 5.

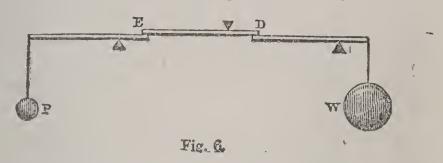
joint, the power is the strong muscle (the biceps) which passes down the front of the humerus, and is attached,

ラブ・ト つき

LEVER.

of the forearm, together with anything held in the hand, the two being supposed to be combined into one weight acting at B. By this arrangement, a large extent of motion is gained, by a slight contraction or extension of the muscle.

When a large mechanical advantage is required, this may be obtained, without inordinate lengthening of the lever, by means of a combination of them (as in fig. 6). Here the levers have their arms in the ratio of 3 to 1, and a little consideration will make it plain that a power (P) of 1 lb. will balance a weight of 27 lbs.; but in this



instance the particular defect of the lever as a mechanical power shows itself prominently; for if the weight has to be lifted two inches, the power requires to be depressed (2×27 or) 54 inches; and as the extent of sweep of the power cannot be largely increased without inconvenience, the advantages of this machine are confined within narrow limits.

LEVER, lē'vėr, Charles, M.D.: Irish novelist: 1806, Aug. 31—1872, June 1; b. Dublin. He was educated for the medical profession, studying first at Trinity College. afterward on the continent. After taking his degree at Göttingen, he seems to have practiced medicine in some relation to the British legation at Brussels (see a quotation by Thackeray in Book of Snobs), though he was not formally appointed physician to the embassy. ward he became editor of the Dublin University Magazine (1842-45). He opened his brilliant literary career by Harry Lorrequer; after which he published a whole library of fiction, the larger proportion of which was issued in serial form with illustrations. Among L.'s best novels are Charles O'Malley, Tom Burke, Roland Cashel, The Knight of Gwynne, The Dodd Family Abroad, Davenport Dunn. When he undertook the editorship of the famous Irish magazine, L. fixed his residence in the neighborhood of Dublin; but when, after a few years' trial, his work became distasteful, he removed to Florence. He was appointed vice-consul at Spezzia 1858, and was transferred 1867 to Trieste, where he died. The earlier novels of L. are remarkable for boisterous mirth and whirl of incident. His ladies and gentlemen seem under the influence of champague, his peasants and servant-men of 'potheen.' The great defect of his carlier work was that it lacked plot and unity, being composed of fragments earelessly pieced together. Individual

LEVERET-LEVI.

characters and scenes however were so amusing as to give his books great popularity. Latterly, the current of his genius became broader and clearer, and several of his later works have a higher though scarcely an enduring interest. A life of L. by N. J. Fitzpatrick appeared 1879.

LEVERET, n. lev'er-et [OF. levrault; F. levraut, a young hare—from lievre, a hare: L. lepŏrem, a hare]: a young hare in the first year.

LEVERETT, l e v' e r - e t, Sir John, Baronet: 1616–79; b. England: officer in Cromwell's army: emigrant with his father to New England. He was speaker of the Mass. legislature 1665–71; deputy gov. 1671–73. He was maj.gen. in the militia 1663–73. Charles II. knighted him 1676. A town in w. Mass. was named from him.

LEVEROCK, n. lěv'ér-ĭk, or LAVEROCK, n. lā'vėr-ĭk: in Scot., a lark.

LEVERRIER, lē-věr'ĭ-ėr, F. lėh-vā-rē-ā', Urbain Jean Joseph: French astronomer of great celebrity: 1811, Mar. 11—1877, Sep. 23; b. at St. Lô, dept. of Manche. He was admitted into the Polytechnic 1831, and was subsequently employed for some time as an engineer in connection with the Tobacco Board. In 1836, he published Mémoires sur les Combinaisons du Phosphore avec l'Hy-. drogène et avec Oxygène. His Tables de Mercure, and several memoirs on 'the secular inequalities,' opened to him the door of the Acad. 1846; and at the instigation of Arago, he applied himself to the examination of the disturbances in the motions of the planets, from which the existence of an undiscovered planet could be inferred; and as the result of his laborious calculations, directed the attention of astronomers to the point in the heavens where, a few days afterward, 1846, Sep. 23, the planet Neptune was actually discovered, the same thing being also, by a remarkable coincidence, done about the same time, and independently, by the English astronomer Adams (q.v.). For this L. was rewarded with the grand cross of the Legion of Honor, a professorship of astronomy in the Faculty of Sciences at Paris, and various minor honors. When the revolution of 1848 broke out, L. sought distinction as a democratic politician; the dept. of La Manche chose him 1849, May, to the legislative assembly, where he at once became counter-revolutionary; and 1852, Louis Napoleon made him a senator. In 1854 L. was appointed to the directorship of the Observatory of Paris, an office which, except for an interval of three years (1870-73), he held till his death.

LEV'ESON-GOW'ER: see Ellesmere, Earl of.

LEVI, $l\bar{e}'v\bar{\imath}$: third son of Jacob and Leah (Gen. xxix. 34). He is conspicuous through the part he took with his brother Simeon in the slaughter of the inhabitants of Shechem, with Hamor and Shechem, their princes, while in a defenseless state, in order to avenge the

LEVIABLE—LEVIS.

wrong inflicted by the latter on his sister Dinah (Gen. xxxiv.). Jacob, even on his death-bed, could not forgive this their bloody 'anger and self-will,' and pronounced this curse on them both, that they should be scattered among Israel (Gen. xlix. 7). This was fulfilled in the case of Levi, the tribe of whose descendants, singled out for the service of the sanctuary and the general instruction of the people, had to reside in cities set aside for them throughout the length and the breadth of the land: see Levites. In Egypt, the house of Levi had divided itself into three families, those of Gershon, Kohath, and Merari.

LEVIABLE: see under LEVY.

LEVIATHAN, n. lĕ-vī'ā-thăn [mid. L. levĭāthan—from Heb. livyāthān, a dragon or serpent]: scriptural term for a huge 'sea-monster,' especially a Crocodile (q.v.). In the Prophets and Psalms, it is occasionally used as a symbol of Egypt and Pharaoh. L. in Ps. civ. 26 is probably the whale. Many wondrous allegorical tales are connected with this word in the Talmud and Midrash.

LEVICO, *lĕv'ē-ko*: town of the Tyrol, Austrian empire, 9 m. s.e. by e. from Trient (*Trent*), in the upper part of the valley of the Brenta, near the small lake of L., where the Brenta rises. Mulberry trees are cultivated, and the care of the silkworm and spinning of silk employ many of the people. Pop. (1880) 4,530; (1890) 3,988.

LEVIED: see under LEVY.

LEVIGATE, v. lev'i-gāt [L. levigātus, made smooth: It. levigare, to polish]: in OE., to make smooth; in chem., to rub or grind to a very fine powder by means of water and a stone. Lev'igating, imp. Lev'igated, pp. Lev'-igation, n. -gā'shŭn, the act or process of grinding or rubbing a solid substance to an impalpable powder, with the aid of a little water,—trituration may be called the dry method.

LEVIN n. lev'in [Norw. ljon; Dan. lyn; prov. Swed. lygna, a flash of lightning]: in OE., a flash; a flash of

lightning.

LEVIRATE, a. le-vi'rāt [L. levir; Gr. dāer, a brother-in-law]: pertaining to the Jewish law by which a widow without issue was to be married to the brother of her deceased husband; also Leviratical, a. lev'i-rāt'i-kāl. Lev'ira'tion, n. -i-rā'shān, the act of marrying a brother's widow.—Levirate marriage was an institution not only among the Hebrews, but also among Moabites, Persians, etc., and still exists in Arabia, Abyssinia, etc.

LEVIS, levis, F. la-ve' (formerly Pointe Levi): chief town of the county of L., Quebec, Canada; on the St. Lawrence opposite Quebec. It is fortified; is connected with Quebec by a ferry, and contains the wharves at which passengers are landed from ocean steamships. L. is an important station on the Grand Trunk railway, and has an extensive river commerce. Pop. (1901) 7,783.

LEVITA, lē-vī'ta, Elijan (Halevi, Ben Asher; Ash-kenasi = the German, Habachur = the Master, Hamedakdek = the Grammarian): Jewish grammarian and exegete, who, though much overrated, still holds high rank among Hebrew scholars: 1470-1549; b. Neustadt on the Aisch, near Nuremberg. One of the then frequent expulsions of the Jews forced him to seek refuge in Italy, where he held a high position as teacher of Hebrew, first in Venice, next in Padua, finally in Rome (1514). Cardinal Egidio here became his patron and pupil, but even he could not prevent L.'s being expelled from Rome with his Jewish brethren, 1527. He then returned to Venice, where he lived for the most part until His principal exegetical and biblical works are Commentary on Job in verse, a German Translation of the Psalms, and Edition of the Psalms with Kimchi's Commentary, an Edition of the Targum to Proverbs, and of Kimchi's Commentary to Amos. His grammatical works are chiefly: Masoreth Hammesoreth (Tradition of Traditions), a treatise on the vowel-points, etc., in the Old Testament; Tub Taam (Good Judgment), a treatise on Accents; Sefer Habachur or Dikduk (Grammar), besides many minor treatises. In the field of lexicography, he has contributed Meturgeman (= Dragoman), an attempt at a Talmudical and Targumical Dictionary; Tishbi, a complement to Hebrew dictionaries; Shemoth Debarim (The Names of Things), a Hebrew-German dictionary; Nimukim, glosses to David Kimchi's Book of Hebrew Roots, etc. Most of L.'s works have been repeatedly edited and partly translated by Buxtorf, Münster, Fagius, and others, who owed most of their Hebrew knowledge to L. exclusively; a fact not generally recognized.

LEVITE, n. $l\bar{e}'v\bar{\imath}t$ [mid. L. $lev\bar{\imath}t\bar{e}s$; Gr. $lev\bar{\imath}t\bar{e}s$]: one of the tribe of Levi, which was set apart for the public service of religion under the Mosaic law. Levitical, a. $l\bar{e}$ - $v\bar{\imath}t'\bar{\imath}$ - $k\bar{\imath}d$, belonging to the Levites; priestly. Levit-ICALLY, ad. $-l\bar{\imath}$. Leviticus, n. $l\bar{e}$ - $v\bar{\imath}t'\bar{\imath}$ - $k\bar{\imath}us$, one of the books of the Old Testament Scriptures, containing the laws and regulations that relate to the priests and Levites.

LEVITES, lē'vīts: descendants of Levi (q.v.), singled out for the service of the Hebrew sanctuary. The term is employed particularly in distinction from Priests (q.v.), in designating all those members of the tribe who were not of the family of Aaron. It was their officefor which no further ordination was required in the case of the individual-to erect, to remove, and to carry the tabernacle and its utensils during the sojourn of the Israelites in the wilderness. When the sanctuary had found a fixed abode, they acted as its servants and guardians, and had to assist the priests in their holy func-tions in the sanctuary and in their medical capacity among the people. The vocal and instrumental music in the temple was likewise under their care, as were also the general instruction of the people, certain judicial and administrative functions, the keeping of the genear

LEVITICUS.

logical lists, and the propagation of the Book of the Law among the community. In order to enable them better to fulfil these functions, no special part of the land was allotted to them, but they were scattered—in accordance with Jacob's last words (Gen. xlix. 7)—in Israel; 48 Levitical cities, among which there were also certain 'cities of refuge,' being set aside for them on both sides of the Jordan; without, however, preventing their settling wherever else they pleased. Their revenues consisted of the annual Tithe (q.v.), and of a share in the second tithe, due every third year, and in the sacrificial repasts. The length of their service varied at different times. No special dress was prescribed for them until

the time of Agrippa.

While in the desert numbering not more than 8,580 serviceable men, they had, under David, reached the number of 38,000 men fit for the service, 24,000 of whom this king selected, and divided them into four classes—sacerdotal assistants, doorkeepers, singers and musicians, and judges and officers. A very small number only returned from the exile, and all the Mosaic ordinances with respect to their citics, tithes, share in sacrificial repasts, etc., were virtually abrogated during the time of the second temple. Nothing but the service in the temple, in which they were assisted by certain menials ealled Nethinim, was left to them. It may be presumed that they earned their livelihood partly like the rest of the community, partly as teachers, seribes, Their travelling-garb eonsisted, according and the like. to the Talmud (Jebam., 122 a), of a staff, a pouch, and a Book of the Law. Foreign rulers also granted them exemption from taxes. This is the only tribe which is supposed to have kept up its pure lineage to this day, and eertain, albeit small, signs of distinction are still bestowed upon its members, especially in the case of the presumed descendants of Aaron (the Kohanim). But the purity of lineage is more than questionable in many instances.—L. is a name given also to certain sacerdotal assistants in the Roman Church.

LEVITICUS, lĕ-vĭt'ĭ-kŭs (Heb. Vajikra): third book of the Pentateueh, containing eliiefly the laws and ordinances relating to the Levites and priests. Little or no progress is made in it with respect to the history of the people, and the few events recorded are closely connected with the special aim and purport of the book. The erection of the sanctuary having been described at the end of Exodus, the nature of the worship—revealed by God within this tabernacle—is set forth in L., which forms its continuation. The order is not strictly systematic, but a certain plan is apparent, in outline at least.

For the age and authorship of L, see Pentateuch. The whole of the supposed 'original' or Elohistic document (see Genesis) is by some eminent modern critics held to be embodied, in its primitive shape, as nearly as possible at least, in the 'Leviticus' as we have it now.

LEVITY-LEVYNE.

Among the few additions and alterations ascribed to the Jehovist, are reckoned chapters x. 16–20, xx. 20–25, xxv. 18–22, and the greater part of chap. xxvi. (3–35), the second verse of which (end of *Parashah* xxxii.) is held to have concluded the Sinaitic legislation in the original document. Many scholars, however, strongly question the principles on which such minute and positive criticism proceeds, though not denying them some possible general application in a limited range, and as furnishing interesting and sometimes helpful conjectures.

LEVITY, n. lev'i-ti [L. levitātem, lightness, fickleness—from levis, light: It. levita]: lightness of temper or conduct; frivolity; idle pleasure; want of seriousness; in OE., the quality by which one body has less weight than another.—Syn.:lightness; inconstancy; changeableness; unsteadiness; laxity thoughtlessness; inconsideration; flightiness; volatility; buoyancy.

LEVULOSE: a variety of Glucose (q.v.); same as Lævulose (q.v.).

LEVY, v. lev'i [F. lever, to raise—from L. levāre, to raise: F. levée, the act of raising or gathering]: to raise; to collect, said of troops or taxes: N. the act of collecting men for some service; the men thus collected (see Levy of Troops): the act of raising money by assessment: the seizing by a sheriff of real or personal property to satisfy an execution against it. Personal property can be levied upon only by being brought under the personal power of the officer; but the setting forth the metes and bounds of the portion of real estate seized, suffices. Lev'ying, imp. -i-ing. Levied, pp. lev'id. Leviable, a. lev'i-a-bl, that may be collected or assessed. To levy war, to raise or begin war.

LEV'Y of Troops: compulsory raising of a body of soldiers from any specified class in the community for general defense or offense. When a country is in danger of instant invasion, a levée en masse is sometimes made-i.e., every man capable of bearing arms is required to contribute in person toward the common defense. On less urgent occasions, the L. may be restricted to a class, as to men between 18 and 40 years of age. At other times, a L. of so many thousand men of a certain age is decreed, and the districts concerned draw them by lot from among their eligible male population. In armies sustained by volunteering, the L., which is a remnant of barbarous times, is unnecessary; but the system was frequently resorted to in France before the enactment of the conscription laws: in the war of the rebellion there were (1862) great levies in the United States; and in any country where great danger is apparent, and volunteers are not sufficiently numerous, recourse must at all times be had to a L. of the people.

LEVYNE, n. ler'in [after Levy, the mineralogist]: one of the zeolite family, occurring chiefly in amygdaloid and other trap rocks in white or yellowish hexagonal crystals,

LEW-CHEW-LEWES.

LEW-CHEW' ISLANDS: see Loo-choo Islands.

LEWD, a. lôd [AS. læwd, or læwede, belonging to the laity—originally, illiterate, as opposed to the educated clergy, hence inferior, bad, lustful]: given to lustful indulgence; dissolute; licentious; impure; in OE., inferior; bad. Lewd'ly, ad. -lī. Lewd'ness, n. -nĕs, lustful licentiousness; debauchery; unchastity. Lewdster, n. lôd'ster, in OE., a lecherous man.—Syn. of 'lewd': profligate; laseivious; lecherous; lustful; libidinous; sensual; unchaste; impure; wanton; debauched.

LEW'ES (Del.): see DELAWARE BAY.

LEWES, *lū'is:* eounty-town of Sussex, market-town, and parliamentary borough of England, most pioturesquely situated on the navigable river Ouse, 50 m. s. from London, 7 m. from the port of Newhaven. L. is the seat of the assizes, and is the seat of election for E. Sussex. Fairs are held here on Whit-Tuesday and May 6 for horses; July 20 for wool; and Sep. 21 and 28 for Southdown sheep, of which 40,000 to 50,000 are often The chief trade is in grain, sheep, and eattle. There are three iron foundries; and ship-building, brewing, tanning, rope-making, and lime-burning, employ many of the inhabitants. Races are held here annually in July or Aug., near Mount Harry, on the Downs, where the eelebrated battle of L. was fought, between Henry III. and the insurgent barons of the kingdom, 1264, May The eastle, the principal tower of which now forms the museum of the Sussex Arehæological Soc.. was long the seat of William de Warrenne, whose remains and those of his wife, Gundrada, daughter of the Conqueror, were discovered here. L. is of very ancient origin, and was the site of a Roman station or eamp. Three papers are here published. The town is governed by two high-Pop. (1871) 10,753; (1881) 11,199; (1891) 10,997. eonstables.

LEW'ES, George Henry: 1817, Apr. 18-1878, Nov. 30; b. London: author. He studied medicine, but turned to authorship. In his 21st year, he went to Germany, where for two years he studied the life, language, and literature of that country. He made his residence in London, and was an industrious and suecessful littérateur—exeelling as biographer and critic. He contributed to quarterlies and magazines; edited the Leader newspaper 1849-54; eomposed novels, eomedies, and tragedies; and ultimately studied physiology and eognate branches of seience, in which he won reputation. L. was the husband of 'George Eliot' (see Evans, Marian). His principal works are Biographical History of Philosophy (1845, later a new and much enlarged ed.); The Spanish Drama, Lope de Vega and Calderon (1846); Comte's Philosophy of the Sciences (forming one of the volumes in Bohn's Scientific Library, 1853), not a mere translation, but in several parts a complete remodelling, by which the style does not suffer; Life and Works of Goethe, etc. (1855); Seaside Studies at Ilfracombe (1858); Physiology of Common Life (1860); Problems of Life and Mind (1873-4); On Actors and the Art of Acting (1875); and The Physical Basis of Mind (1877). In 1865 L. founded the Fortnightly Review, and for a time was its editor.

LEWIS, $l\bar{u}'is$, Andrew: 1720–1781, Sep. 26; b. Donegal, Ireland: soldier. He came to America with his parents, 1732; settled in Bellefonte, Augusta co., Va.; in the old French war was a vol. soldier in the O. campaign 1754; maj. in Washington's Va. regt., and present at the surrender of Fort Necessity and at Braddock's defeat; commanded the Sandy Creek expedition 1756; was captured by the French at Fort Duquesne 1758; was Va. commissioner to make treaty with the Iroquois at Fort Stanwix 1768; defeated the Shawnee confederacy at the mouth of the Great Kanawha river 1774; and was a member of the Va. convention 1775, May-June. Congress appointed him brig.gen. 1776, Mar. 1, and he dislodged Lord Dunmore from Gwynn's Island by order of the council of safety. Ill health compelled him to resign 1777, Apr. 15. His statue is one of the cluster around the Washington monument in Richmond.—His brother, Charles L., served under him on the frontier, became a col. of Va. militia, and was killed in the Shawnee battle 1774, Oct. 10.—Another brother, WILLIAM L., 1724-1811, served under Andrew in the French and Indian wars, and attained the rank of col. in the revolutionary army.

LEW'IS, Edmonia (aboriginal name Wildfire): sculptor: b. Greenbush, near Albany, N. Y., 1845, July 4; daughter of a negro father and a Chippewa Indian mother. She was left an orphan when 3 years old; lived with the Indians till 1859; attended school in Oberlin, O., three years; began modelling in clay in Boston; achieved her first success with a portrait bust of Col. Robert G. Shaw; and 1865 was enabled to go to Rome, where she studied with Tadile and has since resided. Beside numerous portrait busts she has executed The Freedwoman, Death of Cleopatra, The Old Arrow-maker and His Daughter, Hagar, Rebekah at the Well, Hiawatha's Wooing, Hiawatha's Wedding, and Asleep.

LEWIS, lū'īs, Francis: 1713–1803; b. Llandaff, Wales. He studied at Westminster, and settled as a merchant in New York. He fought in the old French war, on Gen. Mercer's staff, 1757; was captured at Oswego by the French and sent as prisoner to France. His services had been such that the British govt. gave him 5,000 acres of land. L. was in the continental congress 1775–79, and one of the signers of the Declaration of Independence. The British authorities subjected him and his wife to long imprisonment, and his estate was mostly lost. He d. in New York.

LEW'IS, Right Honorable Sir George Cornewall, Bart.: English statesman and author: 1806, Apr. 21—1863, Apr. 13; b. London; eldest son of Sir Thomas

Frankland L., first baronet, of Harpton Court, Radnorshire. L was educated at Eton and Christ Church, Oxford, where, 1828, he was first-class in classics, and second-class in mathematics. He was called to the bar of the Middle Temple 1831, and after acting on various commissions of inquiry, succeeded his father as poorlaw commissioner 1839, remaining until the Board was reconstituted 1847. He had meanwhile married Lady Maria Theresa, sister to the fourth Earl of Clarendon, and a connection by marriage of Earl Russell. Being thus incorporated into the number of whig official families, his political promotion was certain and rapid. sat for Herefordshire 1847-52, and became successively sec. to the Indian board of control, under-sec. for the home dept., and financial sec. to the treasury. In 1352, he lost his seat in the house of commons, and subsequently edited the Edinburgh Review till 1855, when he was elected for the Radnor district of boroughs. Lord Palmerston soon offered him the chancellorship of the exchequer in his first administration, which he held from 1855, Mar., to the dissolution of the government 1858, Feb. On the return of Lord Palmerston to power, 1859, June, L. accepted the post of sec. of state for the home dept., which he exchanged, 1861, on the death of Lord Herbert, for the office of sec. of state for war. the same year he published a work of much research, Astronomy of the Ancients. L. was an able, earnest, and sincere politician; not an eloquent orator, yet a man of sound sense, varied knowledge, and high moral and intellectual tone. His speculative writings show candor and practical good sense. His Inquiry into the Credibility of Early Roman History, is conducted on the critical principles of Niebühr, but is more rigorous and skeptical in spirit. His works include—Origin and Formation of the Romance Language, The Fables of Babrius, The Use and Abuse of Political Terms, The Influence of Authority in Matters of Opinion, The Method of Observa-tion and Reasoning in Politics, Local Disturbances and the Irish Church Question, The Government of Dependencies, A Glossary of Provincial Words used in Herefordshire, and Astronomy of the Ancients. His latest work was Dialogue on the Best Form of Government, which was published a few days before his death.

LEWIS, $l\bar{u}'is$, or Lewisson, $l\bar{u}'is$ -on, in Mechanics: contrivance for hoisting stones, used by the ancient Romans, brought to its present form by a Frenchman, architect for Louis XIV., who named it in compliment to his master. Two dovetail tenons are inserted in a dovetail mortise in the stone, and are forced apart therein with a key fitting between them, and shackled to the chain for hoisting.—L. is also a kind of shears for cropping woolen cloth.

LEW'IS, MATTHEW GREGORY (known also as Monk Lewis): 1775, July 9—1818, May 14; b. London: author. He was educated for the diplomatic service at West.

minster School and Christ Church College, Oxford; studied the language, drama, and fiction of Germany, was appointed attaché to the British embassy at the Hague 1794; and published his remarkable romance Ambrosia, or the Monk, 1795. His work had a great sale, but was so licentious in details that the govt. compelled him to make many emendations before it would permit further editions. On attaining his majority he was elected to parliament, but soon tired of political life, and applied himself wholly to literature till the death of his father placed him in possession of a large estate in the W. Indies. He made trips thither 1815-16 and 1817-18 to improve the condition of his slaves, and died on a homeward voyage. L. dealt largely in mystery and tragic suggestion. He was author of the musical drama The Castle Spectre (1796); numerous operatic and tragic pieces: Tales of Wonder, in conjunction with Sir Walter Scott (1801); The Bravo of Venice (1804); Timour the Tartar (1812); and The Journal of a West Indian Proprietor, written on his first voyage and published posthumously (1834).

LEW'IS, MERIWETHER: 1774, Aug. 18-1809, Oct. 8; b. near Charlottesville, Va.: explorer. Of a naturally adventurous disposition, he joined the troops called out to suppress the whisky rebellion in w. Penn. 1794, and in the following year entered the regular army. He was promoted capt. 1800, appointed private sec. to Pres. Jefferson 1801, and was recommended by him to command an exploring expedition to the Pacific authorized by congress 1803. With Capt. William Clarke (q.v.) and an escort of soldiers, he started on his overland journey in the summer of 1803; began ascending the Missouri river in the spring of 1804; reached its great falls 1805, July; ascended the Jefferson river to its source; reached the Kooskoosky river, branch of the Columbia, Oct.; and arrived at the mouth of the Columbia Nov. 15. The party reached St. Louis on the return 1806, Sep. Congress rewarded L. with the office of gov. of Mo. Terr., and his followers with grants of land 1807. L. committed suicide in a fit of melancholy near Nashville. See Biddle and Allen's Narrative of the Lewis and Clarke Expedition, with memoir of L. by Thomas Jefferson (1814).

LEW'IS, Morgan: soldier and statesman: 1754, Oct. 16—1844, Apr. 7; b. New York; son of Francis L. (q.v.). He graduated at the College of N. J. 1773; joined the continental army as maj. of the 2d N. Y. regt. 1775, Nov.; was promoted col. and chief of staff to Gen. Gates 1776, June; served through the Saratoga campaign; and was conspicuous in the battles of Stone Arabia and Crown Point. After the war he completed his legal studies, was admitted to the bar, and became judge of the court of common pleas, attor.gen. of N. Y. 1791, chief justice of the state supreme court 1792, and gov. 1804. In 1812 he declined the office of sec. of war, and was appointed q.m.gen. of the army; 1813, promoted maj.gen., and

served on the Niagara frontier; and 1814 commanded the defenses of New York. He was pres. of the Order of the Cincinnati and of the N. Y. Hist. Society.

LEW'IS (or SNAKE) RIVER: great southern branch of Columbia river; rising in the Rocky Mountains, on the w. border of Nebraska. After a circuitous course, the general direction is n.w. through Oregon; and after a total course of 900 m., it joins the Columbia near Fort Walla-Walla, lat. 46° 6′ n., long. 118° 40′ w.

LEW'IS, TAYLER, LL.D., L.H.D.: 1802, Mar. 27-1877, May 11; b. Northumberland, Saratoga co., N. Y.: Reformed (Dutch) theologian. He graduated from Union College 1820, and studied law; but became principal of an acad. at Waterford, N. Y., 1833; prof. of Greek and Latin in the Univ. of the City of New York 1838; prof. of Greek in Union College 1849; afterward prof. of Oriental languages and Biblical literature till his death. He was an eager and versatile student: higher mathematics, astronomy, and music were enthusiastically pursued. He was proficient also in the Semitic languages and a leading Arabic scholar. He contributed largely to periodicals of the highest grade, and published numerous volumes. He was thorough, candid, and reverent, suggestive, inspiring, and eloquent. The fertility of his mind occasioned sometimes a lack of clear order in arrangement of topics. He wrote The Six Days of Creation (1855,79), The Bible and Science (1856), The Divine Human in the Scriptures (1860), The Light by which we see Light (Vedder Lectures, pub. 1875); also other works. He died at Schenectady.

LEW'IS-WITH-HAR'RIS [Lewis, from Norwegian Ljodhhus, the sounding house]: island of Scotland, one of the Outer Hebrides, most northern and largest of the group, about 30 m. n.w. from Ross-shire, from which it is separated by the Minch (q.v.). Lewis, the larger and most northerly part of the island belongs to Ross-shire; the other portion, Harris, belongs to Inverness. Length, 60 m.; greatest breadth, 30 m.; 770 sq. m. The coasts are wild and rugged; the chief indentations being Broad Bay, Lochs Erisort, Seaforth, Resort, and Roag. The Butt of Lewis, promontory at the extreme n., lat 58° 31' n., long. 6° 15′ 30″ w., rises 142 ft. above sea-level. surface of the island is rugged, with tracts of swamp, a considerable portion is covered with peat, and there are remains of ancient forests. Barley and potatoes are principal crops. Remains of ancient edifices abound. The inhabitants are almost all of Celtic extraction, with the exception of a colony in the n., who, though they speak Gaelic, are of purely Scandinavian descent. Stornoway, on the e. coast, is the principal town. Near it is Stornoway Castle, seat of Sir James Matheson, Bart., who, as proprietor of Lewis, has expended large sums in various improvements. Stornoway is visited by steamers from Glasgow.—Pop. of island (1871) 25,947; (1881) 28,339, -See Hebrides. (1891) 30,726.

LEWISIA-LEWISTON.

LEWIS'IA: genus of plants, of nat. ord. Portulacaceæ (see Purslane): named from the American traveller Meriwether Lewis (q.v.). L. rediviva is found in the regions of his explorations, on the w. side of the Rocky Mountains. Its roots are gathered in great quantities by the Indians, and are highly valued as nutritive, and also as restorative, a very small quantity being deemed sufficient to sustain a man through a long journey and much fatigue. It is called Tobacco Root because, when cooked, it has a tobacco-like smell.

LEW'ISTON: city in Androscoggin co., Me., 36 m. n. of Portland, 30 m. s.w. of Augusta; on left bank of Androscoggin r., opposite Auburn, with which it is connected by 4 bridges. It was laid out 1770; incorporated 1795; organized as city 1863; pop. (1900) 23,761. It is the terminus of the branch r.r. from Crowley's junction, and on the Maine Central r.r. connecting with the Grand Trunk r.r. and the Boston and Maine r.r. by way of Auburn and Danville. It has exceptional facilities for manufactures owing to its abundant water power derived from a dam across the river, a fall of the water of 50 ft. in a distance of 200 ft., and a canal 60 ft. wide to distribute the water. This dam and canal are owned by the Franklin Company, which constructed them at a cost of \$1,000,000. The manufactorics, producing mainly cotton and woolen goods and machinery, besides boots and shoes, bricks, carriages, sash, furniture, etc., numbered (1900) 282, employing \$10,984,871 capital and 7,159 persons, paying \$2,509,030 for wages and \$3,957,673 for materials, and yielding products valued at \$8,581,354. The library of L. 1880 had 6,000 vols. There are 4 periodicals, numerous fine churches, good graded public schools, a handsome city hall, a park and soldiers' monument, gas works, and 2 national banks (cap. \$600,000), and 2 savings banks. L. is the seat of Bates College, controlled by the Free-will Baptists; organized 1863, and named after Benjamin E. Bates of Boston, who gave it an endowment of \$200,000. Its grounds are spacious and beautiful, its buildings sightly and well furnished, including a dwelling for its pres., and a library of about 10,000 vols. In 1870 a theological seminary was organized in connection with it, not far from the grounds; and the Nichols Latin School, also near the college, is owned by it and maintained as a preparatory school; it was named in honor of Lyman Nichols of Boston.

LEW'ISTON: town in Niagara co., N. Y.; on the Niagara river, and the New York Central and Hudson River r.r., Buffalo and Niagara Falls r.r., and Rome Watertown and Ogdensburg r.r.; opposite Queenstown, Canada, 7 m. s. of Niagara Falls, 30 m. n.w. of Buffalo, at base of Mountain Ridge terrace. It is at the head of navigation from Lake Ontario, contains the Rom. Cath. seminary of Our Lady of the Angels (organized 1856), has 4 churches, was formerly connected with Queenstown by a suspension bridge, has a line of daily steam-

LEXFORI-LEXINGTON.

boats plying to Toronto in the summer season, and includes part of the Tuscarora Indians in its population. L. was burned by the British 1815. Pop. (1870) 770; (1880) 680; (1890) 633; (1900) 697.

LEX FO'RI [L., law of the court of justice]: legal expression often used to denote the law of the country where a suitor brings his action or suit: see International Law

TIONAL LAW.

LEXICAL, a. *lĕks'ī-kăl* [from Lexicon, which see]: pertaining to a lexicon; settled by lexicography. Lex'-ICALLY, ad. -kăl-lĭ.

LEXICOGRAPHY, n. lěks'i-kŏg'ră-fĭ [Gr. lexĭkon, a dictionary; graphō, I write]: the art of composing dictionaries, or the act of writing one; the principles according to which dictionaries should be compiled. Lexicographic, a. lěks'i-kō-grăf'ik, or Lex'icograph'ical, a. -i-kăl, pertaining to the writing of dictionaries. Lex'icog'rapher, n. -kŏg'ră-fer, the author or compiler of a dictionary.

LEXICOLOGY, n. lěks'ĭ-kŏl'ŏ-jĭ [Gr. lexĭkon, a dictionary; logos, discourse]: the science of the derivation and signification of words; that branch of learning which treats of the proper meaning and application of words. Lex'icol'ogist, n. -jĭst, one skilled in.

LEXICON, n. lěks'i-kön [Gr. lexikon, a dictionary—from lexis, a speaking, diction—from legō, I speak]: a dictionary; a dictionary of words of a foreign language, as of Latin, Greek, Hebrew, or German (see Dictionary).—Syn.: glossary; vocabulary; dictionary; thesaurus; catalogue; directory; gazetteer; index; encyclopedia; cyclopedia.

LEXIGRAPHY, n. leks-ig'ra-fi [Gr. lexis, a speaking, a word; grapho, I write]: the definition of words. Lexi-Graphic, a. leks'i-graf'ik, pertaining to lexigraphy.

LEX'INGTON: city, county-seat of Fayette co., Ky., on a fork of the Elkhorn river, about 87 m. e. of Louisville, 82 m. s. of Cincinnati, in the midst of the fertile and beautiful country known as the Blue Grass region; on the Louisville and Nashville, the Chesapeake and Ohio, the Louisville Southern, the Kentucky Central, the Kentucky Union, and the Queen and Crescent railways. was settled, 1775, by Colonel Robert Patterson, and received its name because as the town was being laid out the news of the battle of Lexington, Mass., was received. It was incorporated 1782, by the Va. legislature, and was the seat of the first legislature of Ky. The city is handsomely laid out, with wide streets running at right angles, well shaded, paved, and lighted with gas; its main street is 2 m. long, with a beautiful cemetery, containing a monument to Henry Clay, at its w. terminus. It has an extensive trade, and manufactories of whisky, carriages, flour, ropes, bagging, machinery, etc.; 7 national banks (cap. \$1,400,000), 2 private

LEXINGTON.

banks, 20 churches, 2 state banks (cap. \$2,013,000), a daily and 18 weekly and monthly periodicals; a city hospital, orphan asylum, state insane asylum, public library with about 18,000 vols.; and besides its public schools, in which white and colored children are separately educated, has 2 Rom. Cath. schools, and 5 female seminaries; also Hocker Female College (Disciples), Christ Church Seminary, (Prot. Episc.), Lexington College (Bapt.) for women, St. Catharine's Acad. (Rom. Cath.), and the Sayre Institute. It is also the seat of the Ky. Univ. (Chris.) q.v. since 1865, when it was removed here from Harrodsburg, and the Kentucky Agricultural and Mechanical College (q.v.). The 1890 census reports 180 establishments representing 50 industries, with a combined capital of \$1,754,280, employing 1,522 hands with an annual product of \$2,917,141; assessed valuation of property \$12,978,117, city debt \$316,000. It has water works, gas and electric lights and electric street cars.—Pop. of L. (1880) 16,656, of whom 8,000 were colored; (1890) 21,567 of whom 8,547 were colored.

LEX'INGTON: town, county-seat of Lafayette co., Mo., on s. bank of Missouri r., in the midst of a fertile country in which much hemp is raised and some coal mined. It has a brisk trade, being the terminus of a branch of the Missouri Pacific r.r., and of the Kansas City and Eastern r.r.; while North L., on the opposite bank of the river, is terminus of the St. Joseph branch of the Wabash St. Louis and Pacific r.r. It is healthfully located on a bluff 300 ft. above the river, about 42 m. by rail e. of Kansas City, 55 m. n. of Sedalia. The town was settled 1837. There is a fine court-house; and the town has manufactures of furniture and woolen goods, and contains several saw-mills, flour-mills, and rope-walks, and 4 state banks. L. was the scene of two conflicts during the civil war. 1861, Sep., the Confederate Gen. Sterling Price, with a force of about 20,000 men, compelled the Federal Col. Jas. Mulligan to surrender the place after a stubborn defense from the hill at the n.e. of the town where his 2,800 men were entrenched; but on Oct. 16 the Federals recaptured the place. 1864 another fight took place between the Federals under Gen. Blunt and the Confederates under Gen. The town was settled 1837. Pop. (1890) 4,537.

LEX'INGTON, BATTLE OF: 1775, Apr. 19, at Lexington, Middlesex co., Mass., between 60 or 70 American militia under Capt. John Parker, and about 800 British troops under Maj. Pitcairn; notable as the first armed encounter of the American revolution. The purpose of the British to send troops to Concord to destroy the military stores there, and to seize the patriot leaders, John Hancock and Samuel Adams, having been discovered by the Americans, Paul Revere during the night of Apr. 18, rode from Charlestown to Lexington, making known this design and warning and arousing all the patriots along the road. These promptly armed themselves and to the

LEX LOCI—LEXOW INVESTIGATION.

number of 130 assembled at Lexington before 2 o'clock at night; but seeing no signs of the enemy, they were dismissed, and guards stationed who were to watch for the approach of the British and give the alarm when needed. At daybreak Jan. 19, the advance guard of the enemy under Pitcairn was seen nearing the village. The drums were beaten; about 70 of the militia hastily responded and were drawn up in two ranks on the common, with Parker at their head. The British, seeing them, halted to load their muskets, then advanced at double-quick, Pitcairn riding at their head, and calling on the Americans to lay down their arms and disperse. They disregarding his order, he fired his pistol at them and gave his men the order to fire. Their volley killed 4 Americans on the spot and wounded 9; 4 more were killed while trying to escape. Parker now ordered his men to retire, which they did, though a few of them returned the fire of the British, wounding 3 of them and killing Pitcairn's horse. After a halt of half an hour, Pitcairn and his men proceeded on their march to Concord, about 2 m. away, where another fight occurred. On their retreat thence, the country around being now fully roused, they were attacked on every side; sharp fights took place while they passed through Lincoln, and on Fiske's hill in the w. part of Lexington. British were saved from destruction only by the arrival of Lord Percy with 1,200 men to reinforce them. It was only a skirmish, but it was big with results. It formally opened the war that gave America her independence. monument was erected on Lexington common, 1799, to mark the spot of the first bloodshed of the war.

LEX LOCI, *lĕks lō'sī* [L., law of the place]: legal expression to denote the law of the country where a particular act was done, or where land is situated: see INTERNATIONAL LAW.

LEX NON SCRIPTA, *lĕks nŏn skrĭp'tâ* [L., law not written]: expression often applied to the common law, or immemorial custom.

LEXOW INVESTIGATION: official inquiry into the management of the police dept. of New York 1894-5. A bill introduced by N. Y. state senator Lexow, 1894, creating a non-partisan board of police commissioners for New York, which became an act, was vetoed by Gov. Flower; and out of this veto grew the appointment of a select committee of the senate to inquire into the police depts. of the The revelations made to that committee were startling, showing the foulest corruption in all branches of the service investigated, and even uncovering judicial complicity in outrageous crimes. The senate investigating committee had auxiliaries in the Soc. for the Prevention of Crime, led by the Rev. Dr. Charles H. Parkhurst, and a Committee of Seventy, composed of prominent citizens, organ zed to drive Tammany out of power. John W. Goff was chief counsel in conducting this investigation, which resulted in many indictments by the grand jury for bribery, etc., and in numerous convictions.

LEX REI SITÆ-LEYDEN.

LEX REI SI'TÆ: see Conflict of Laws: Foreign Courts: International Law.

LEX TALIONIS, leke tā'li-ō-nis [L. lex, law: tāliō, retaliation, taliōnis, of retaliation]: law of retaliation; common among all barbarous nations, by which an eye for an eye, and a tooth for a tooth, was considered the appropriate punishment. The doctrine is repudiated by all civilized countries.

LEY, n. lī: a different spelling of LyE, which see.

LEY, n. lē: another spelling of LEA or LAY, pasture-

land, which see.

LEYDEN, lī'dn or lā'dn, John: 1775, Sep. 8—1811, Aug. 28; b. Denholm, village of Roxburghshire, Scotland: poet and orientalist. After the ordinary course in the Univ. of Edinburgh, he was licensed as a preacher or 'probationer' of the Church of Scotland. He was an enthusiastic student of languages, especially of the northern and oriental languages. He contributed many translations and original poems to the Edinburgh Magazine. He contributed to Lewis's Tales of Wonder, and aided Scott in amassing materials for his Minstrelsy of the Scottish Border. Having studied medicine, he sailed for India (1802) as asst.-surgeon on the Madras establishment. Removing to Penang for his health he studied the language, literature, history, etc., of the Indo-Chinese tribes. Afterward in Calcutta he was a prof. in the Bengal College; and then a judge. At Batavia, exploring a library of musty Indian manuscripts, he contracted a fever, of which he died. L.'s versification is soft and musical; but 'he is an elegant rather than a forcible poet.' His attainments as an orientalist were extraordinary. The chief evidence extant of them, however, is Essay on the Languages and Literature of the Indo-Chinese Nations, published in the Asiatic Researches. His Poetical Remains were published 1819; and a new ed. of his Poems and Ballads, with memoir by Sir W. Scott, 1858. A monument to L. was erected in Denholm. In 1875his centenary-two new editions of his poems appeared.

LEYDEN, or Leiden, li'dn (Fr. Leyde, the Lugdunum Batavorum of the Romans, originally Luijkduin, from luijk, an end, and dun, a hill; during the middle ages, Lugduin or Leydis): celebrated seat of learning in Holland, on the Old Rhine, 22 m. s.w. of Amsterdam, 17 m. n. of Rotterdam. Pop. (1900) 54,421. It is the oldest town in Holland, and has space for three times its present population. In 1640, L. contained 100,000 souls; in 1750, the numbers had fallen to 70,000; and at the beginning of the present century, to 30,000. Since 1830, trade has again flourished and the population has increased. The streets are wide, the public buildings beautiful, and the canals broad and numerous. Within the city are the ruins of an old castle, called the 'Burg,' supposed to have been built by the Romans before the birth of Christ. The principal manufactures are linen cloths, calicoes, woolens, but on a very small scale, as compared with former times. There is a weekly market, for the whole

of that part of Holland called Rhineland, at which much butter and cheese change hands. But the chief ornament and glory of the city is its university—formerly unsurpassed in Europe. The university had a noble origin. In 1574, when Holland was struggling to throw off the yoke of Spain, L. was besieged by the Spaniards, and had to endure all the horrors of famine. For seven weeks the citizens had no bread to eat, and multitudes perished of hunger. The heroic burgomaster, Pieter Adriaanszoon Van der Werff, even offered his body as food to some who were imploring him to capitulate. At last, the Prince of Orange broke down the dikes, flooded the country, drowned a great number of the Spaniards, and relieved the inhabitants. The Prince of Orange then offered, as some compensation for their unparalleled sufferings, either to remit certain taxes or to establish a university in the city. The Leydeners nobly chose the latter, which was inaugurated by Prince William 1575. Many eminent men, from all countries of Europe, have been connected with it, both as professors and students: among them were Scaliger, Gomarus, Arminius, Grotius, Descartes, Boerhaave, Camper, Spanheim, Ruhnken. When the university recently celebrated, with befitting solemnities, its 300th anniversary, it had between 20 and 30 professors and more than 800 students, of whom about half are law students. It has a valuable library, with many rare Mss.; a magnificent collection in medicine; a botanical garden, valuable for its tropical plants; museum of nat. hist., one of the richest in Europe; and another equally fine of comparative anatomy. The Museum of Antiquities also is excellent. 1807, Jan. 12, the most beautiful quarter of the city was destroyed, and many lives lost, by the explosion of a ship's cargo of gunpowder, and the site of the ruined streets is now a plain on which troops are exercised.

LEY'DEN, Lucas van: about 1494-1533; b. Leyden: one of the most celebrated painters of the early Dutch school. His talents were developed when he was very young, and he was placed in the school of Cornelius Engelbrechsten, artist of repute. He commenced engraving when scarcely nine years of age. His picture of St. Hubert, painted when he was only 12, brought him very high commendation; and the celebrated print, well known to collectors by the name of 'Mahomet and the Monk Sergius,' was published 1508, when he was only He practiced successfully almost every branch of painting, was one of the ablest of those early painters who engraved their own works, and he succeeded, like Albert Dürer, in imparting certain qualities of delicacy and finish to his engravings that no mere engraver ever attained. The pictures of Lucas van L. are noted for clearness and delicacy in color, variety of character and expression; but his drawing is hard and Gothic in form. Examples are in many of the galleries on the continent. His range of subjects was very wide, and embraced events

LEYDEN-L'HOPITAL.

in sacred history, incidents illustrative of the manners of his own period, and portraits. His engravings are very highly prized by collectors, and are ranked about as highly as those of Albert Dürer. He also executed some wood-cuts, which are very rare. Bartsch gives a list of 174 engravings by him. His habits were expensive. He seems to have occasionally entertained his brother-artists in a sumptuous manner; was on terms of intimacy with the celebrated painter, Jean de Mabuse, who is alleged to have been rather too fond of good living; and held friendly intercourse with Albert Dürer, whose talents he admired without professional jealousy.

LEY'DEN, School of (or Recent Dutch School), in Theology: comprising a group of Dutch theologians centering at Leyden Univ., who—while professing to find in the Bible the true religion—limit its inspiration, and require that its facts shall be verified by science and by historical criticism. Applying historical criticism, they deny that the Biblical record is trustworthy farther back than the 8th c. B.C., or the time of Hosea and Amos: all

beyond is hopeless myth.

LEYTE, $l\bar{a}'t\bar{a}$: an island in the Philippine archipelago occupying a central position in the Visayan group; length from n.w. to s.e., 121 m.; and n.e. to s.w., 52 m.; area, 3,872 sq. m. The interior of the island is mountainous and traversed by many fine rivers, and the coast line is indented by numerous bays, some of them the finest of the archipelago. It is one of the best cultivated islands of the archipelago, the chief agricultural product being hemp. The other products are sugar, rice, chocolate, oil, coffee, cotton, corn, cattle, horses, wax, honey, etc. Sulphur, gold, iron, magnetite, lead and silver are found; and the mountains are covered with large forests of wood of economic value. The leading industries are the manufacture of fabrics of abaca and cabonegro, or black boat cables, from hemp, and the extracting of cocoanut oil. Capital of island, Tacloban. Pop. (1899) 270,491.

LEYDEN-JAR, n. $l\bar{\imath}'dn$ - $j\hat{\alpha}r$ or $l\bar{\alpha}'dn$ - $j\hat{\alpha}r$ [invented at Ley-den, Holland]: a jar or bottle, coated inside and out with tin-foil, used to accumulate electricity: see Electricity.

LEZE-MAJESTY, n. lēz-maj'es-tī [F. lèse-majesté, trea-son—from lèse, hurt, treasonable—from L. læsæ, injured or hurt; majestātis, of majesty]: any crime against the sovereign power in a state; treason: also Lese-majesty.

L'HAS'SA, or Las'sA, or L'Ha'sA: see H'LassA.

L'HOPITAL (or L'Hospital), lō-pē-tâl', Michel De, mē-shĕl'dēh: 1505-1573, Mar. 15; b. Aigueperse, Auvergne. He studied law at Toulouse, and made himself known first as an advocate in the parliament of Paris; and after discharging various public functions, became chancellor 1560, during the minority of Francis II. France at this time was torn by contending factions. The Guises, in particular, were powerful, ambitious, and intensely Rom. Catholic; and when one of the family,

LI-LIABLE.

the Cardinal de Lorraine, wished to establish the Inqui. sition in the country, H. boldly and firmly opposed him, and may be said to have saved France from that detestable institution. He summoned the states-general, which had not met for 80 years, and, being supported by the mass of moderate Rom. Catholics, he forced the Guises to yield. His speech at the opening of the assembly was worthy of his wise and magnanimous spirit: 'Let us do away,' said he, 'with those diabolical words of Lutherans, Huguenots, and Papists—names of party and sedition; do not let us change the fair appellation of Christians.' He induced the assembly to pass an ordonnance abolishing arbitrary taxes, regulating the feudal authority of the nobles, and correcting the abuses of the judicial In the following year, he secured various benefits for the persecuted Huguenots; but politico-religious passions were too fierce and vindictive in France in those days to be satisfied with anything but blood; and in spite of the most strenuous efforts which H. could make, the nation was plunged into the horrors of civil war, ending rather in the success of the Guises, the political ultramontanes of their day. The old patriot, who loved France too well to be either a partisan Huguenot or an ultramontane, went into retirement, where he heard the news of the massacre of St. Bartholomew, a crime against the unity of France, the rights of conscience, and common humanity, which broke his heart.

LI, n. $l\hat{e}$: a Chinese mile = :577 Fr. Kilomètre, = :358 (little more than one-third) English mile.—Li is also a Chinese copper coin, often called a cash, worth about one-tenth of a cent.

LIABLE, a. lī'ā-bl [F. lier, to tie, to bind, and postfix able—from L. ligāre, to bind]: responsible; obliged in law or equity; accountable; exposed; subject, generally in an ill sense, as liable to fall. LI'ABIL'ITY, n. -bĭl'ĭ-tĭ, or LI'ABLENESS, n. -bl-nes, the state of being bound or obliged in law or equity; responsibility; the state of being subject, as to contract disease. LI'ABIL'ITIES, n. plu. -i-tiz, debts. Limited Liability, obligation or responsibility only to a certain limited extent—a term applied to a joint-stock company enrolled under strict statutory provisions, whose partners or shareholders are each liable for the debts of the company to only the extent of the amount of their shares, as distinguished from a company whose partners are responsible for its debts to the full extent of their private fortunes (see JOINT-STOCK COMPANY).—SYN. of 'liable'; answerable; amenable; subject; bound.

LIA-FAIL-LIANAS.

LIA-FAIL, n. lē'a-fāl [Gael. lia, stone; fail for faidheil, fate, destiny]: stone on which the ancient Irish kings are said to have been crowned, brought by Fergus to Scotland, and ultimately deposited at Scone, where the Scottish kings sat on it at their coronation; called also Jacob's stone: see Scone.

LIAISON, n. lē'ā-zŏng' [F. liaison, a connection—from mid. L. legātionem, a binding—from L. ligāre, to bind]: connection; union; an illicit or secret intimacy between a man and a woman.

LIANAS, n. plu. lī-ā'năs, or Lianes, n. plu. lī-ānz' [F. liane or liane—from lier, to bind; lien, a band]: term used first in the French colonies, afterward adopted by English, German, and other travellers, to designate the woody, climbing, and twining plants which abound in tropical forests, and constitute a remarkable feature of the scene. Such plants are comparatively rare in colder climates, though the honeysuckles and some species of Clematis



Lianas.

afford familiar examples of them; but as these often overtop the hedges or bushes in which they grow, and fall down again by the weight of their leaves as their stems elongate, so the L. of tropical countries overtop the tallest trees, descend to the ground again in vast festoons, pass from one tree to another, and bind the whole forest together in a maze of living network, and often by cables as thick as those of a man-of-war. Many parts of the forest-as in the alluvial regions of the Amazon and

Orinoco—thus becomes impenetrable without the aid of the hatchet, and the beasts which inhabit them either pass through narrow covered paths, kept open by continual use, or from bough to bough far above the ground. Many L.—as some of the species of Wrightia—become tree-like in the thickness of their stems, and often kill by constriction the trees which originally supported them; and when these have decayed, the convolutions of the L. exhibit a wonderful mass of confusion magnificent in the luxuriance of foliage and flowers. No tropical flowers excel in splendor those of some lianas. Among them are some valuable medicinal plants, e.g., sarsaparilla. The rattans and vanilla are lianas. Botanically considered L. belong to nat. orders the most different. Tropical plants of this description are seldom seen in northern hothouses, being difficult of cultivation.

LIAR, n. lī'er: from Lie 1, which see.

LIAS, n. $l\bar{\imath}'\bar{\alpha}s$ [a probable corruption of lyers or layers: F. lias, formerly liais, a very hard freestone: comp. Gael. leac; W. llech, a flat stone]: term originally applied to the thin-bedded limestones at the base of the oolitic system; in geol., that group or series of strata which in England immediately overlies the Trias or Upper New Red Sandstone; hydraulic cement made from calcareous nodules and bands of the lias strata. Liassic, a. $l\bar{\imath}$ - $\bar{\alpha}s'$ -sik, pertaining to the Lias formation; of the age of the Lias.—The Lias is the lower division of the Oolitic or Jurassic Period (q.v.) The beds composing it may be considered as the argillaceous basis of that series of rocks, consisting of more than a thousand ft. of alternations of clay and limestone, with a few unimportant deposits of sand. It consists of the following groups:

The Upper Lias consists of thin limestone beds scattered through a great thickness of blue clay, more or less indurated, and so aluminous that it has been wrought for alum at Whitby, England. A thick band of vegetable matter or impure lignite occurs in this division, in which are found nodules and lumps of jet, a peculiar mineral composed of carbon and hydrogen, probably having an origin similar to the amber of the tertiary lignites. A series of brown and yellow sands, and a peculiar layer called the cephalopoda bed, from the abundance of these fossils in it, occur above these clays; recently, they have been separated from the inferior oolite, and joined to this division, on the evidence of the contained fossils.

The Marlstone is an arenaceous deposit, bound together either by a calcareous or ferruginous cement, in one case passing into a coarse shelly limestone, and in

the other into an ironstone, which has been extensively

wrought in both n. and s. England.

The Lower Lias beds consist of an extensive thickness of blue clays, intermingled with layers of argillaccous limestone. In weathering, the thin beds of blue or gray limestone become light brown; while the interstratified shales retain their dark color, giving the quarries of this rock, at a distance, a striped or ribbon-like appearance, whence, it is supposed, the miner's name lias or layers is derived. Generally, the clays rest on triassic rocks, but occasionally there is interposed a thin bed of limestone, containing fragments of the bones and teeth of reptiles and fish, generally of undoubted liassic age; occasionally, the bones of keuper reptiles are met with in

it, causing it to have been referred to the Trias.

The Lias is highly fossiliferous, the contained organisms being well preserved; the fishes are often so perfect as to show the complete form of the animal, with the fins and scales in their natural position. Numerous remains of plants occur in the lignite and in the shales. The name Gryphite Limestone has been given to the Lias, from the great quantities of Gryphen incurvata, a kind of oyster, found in it. Some of the older genera of mollusca are still found in these beds, but the general character of these animals more nearly approaches the newer secondary forms. Fish-remains are frequent; the reptiles, however, are the most striking features. They are remarkable for numbers, for the size of many of the species, and for the adaptations in their structure which fitted them to live in water. Most noteworthy are species of Ichthyosaurus (q.v.) and Plesiosaurus (q.v.).

The Liassic rocks extend in a belt of varying breadth across England, from Whitby, on the coast of Yorkshire, s. to Leicester, then s.e. by Gloucester to Lyme Regis in

Dorsetshire.

LIB, v. lib [Dut. lubben, to castrate]: in Scot. and OE., to castrate; to geld. LIB'BING, imp. LIBBED, pp. libd.

LIBANIUS, lī-bā'nī-ŭs: one of the latest and most eminent of the Greek sophists or rhetoricians: born Antioch, in Syria, between 314 and 316; d. abt. 393. He studied at Athens under various teachers, and set up a school in Constantinople, where his prefections were so attractive that he emptied the benches of the other teachers of rhetoric, who had him brought before the prefect of the city on a charge of 'magic." and expelled. He then proceeded to Nicomedia; but after a residence of five years, was forced by intrigues to reave it, and returned to Constantinople. Here, however, his adversaries were in the ascendant; and after several vicissitudes, the old sophist, broken in health and spirit, settled down in his native city of Antioch, where he died. L. was the instructor of St. Chrysostom and St. Basil, who always remained his friends, though L. was himself a pagan. He was a great friend of Emperor Julian, who corresponded with him. His works are numerous, and mostly extant,

LIBANON-LIBEL.

and consist of orations, declamations, narratives, letters, etc. The most complete edition of the orations and declamations is that by Reiske (4 vols. Altenb. and Leip. 1791-97); and of the letters, that by Wolf (Amst. 1738).

LIB'ANON: also Mt. LIB'ANUS: see LEBANON, MOUNT.

LIBATION, n. lī-bā'shŭn [F. libation—from L. libātīōnem, a drink-offering, a libation—from libārĕ; Gr. leibein,
to pour out, as in honor of some god]: literally, anything
poured out before the gods as an act of homage or worship; a drink offering; also the act of pouring it out.
The term was often extended in signification to the
whole offering of which this formed a part, and in which
not only a little wine was poured upon the altar, but a
small cake was laid upon it. This custom prevailed
even in the houses of the Romans, who at their meals
made an offering to the Lares in the fire which burned
upon the hearth. The libation was thus a sort of
heathen 'grace before meat.'

LIBAU, lē'bow: seaport of Courland, Russia, on the Baltic, 526 m. s.w. of St. Petersburg. It existed previous to the settlement here of the Teutonic Knights, who surrounded the town with walls, and erected 1300 a cathedral and a castle. In 1795, it was annexed to Russia. The port is open almost the whole year. Its inhabitants, since the 17th c., have devoted themselves to shipbuilding. In a year, about 200 ships enter and as many clear the port. Imports comprise salt herrings, wines, fruit, and colonial produce; exports (\$13,000,000 to \$14,000,000 in annual value) are chiefly cereals, leather, flax, seeds, and timber. Recent railway connections have greatly increased the importance of L.: nearly 2,000 vessels were reported as visiting the port 1879. The town is also a watering-place, and there is some trade in amber. Pop. (1897) 64,505, mostly of German nationality.

LIBBARD, n. lib'berd: in OE., another spelling of

LEOPARD, which see.

LIBEL, n. lī'bĕl [F. libelle, a libel, a lampoon—from L. libel'lus, a little book—from liber, a book]: malicious or defamatory writing, reflecting on the character of a person, and punishable by law (see below): declaration or charge in writing in an action at law-especially in Scotch law and English ecclesiastical law; also the usual form for beginning an admiralty suit in U.S. courts: V. to expose to public ridicule or hatred in writing, or by a picture; to exhibit a charge against in a court of law. LI'BELLING, or LI'BELING, imp.: N. act of defaming or exposing to public contempt in writing. LI'BELLED, or LI'BELED, pp. -bëld. LI'BELLER, or LI'BELER, n. -er, one who libels. LI'BELLANT, or LI'BELANT, n. -ant, one who libels; in law, one who exhibits a charge in an ecclesiastical or admiralty court. LI'BELLOUS, or LI'BELOUS, a. -ŭs, containing matter which exposes a person to public ridicule or hatred; defamatory. LI'BELLOUSLY, or LI'-

BELOUSLY, ad. -#.—SYN. of 'libel, n.': calumny; aspersion; defamation; slander; detraction; vilification; reviling; lampoon; satire.

LIBEL: publication in writing, print, or by way of a picture, or the like, tending to degrade a man in the opinion of his neighbors, or to make him ridiculous. When similar results follow from words spoken, the act is called Slander (q.v.), which, however, is less severely punished. It is extremely difficult to define what amounts to libellous matter, for the question whether a publication amounts to libel must always be left to the decision of a jury, and this decision is somewhat uncertain, and varies with the popular mood for the time. But the test is, in point of law, whether there results degradation of character. In United States practice, L. signifies (1) a mode of defaming one's character, and (2) a written statement by a plaintiff of his cause of action, and of the relief which he seeks in a suit; and in the latter sense, the filing of a L. is the first proceeding in a suit in courts of admiralty. Under the first signification, slander is defined as defamatory matter addressed to the ear, and L. as defamatory matter addressed to the eye; and as a further distinction between slander and L., it has been held that to write and publish maliciously anything concerning another which either makes him ridiculous or holds him out as a dishonest man, is actionable and punishable criminally, when the speaking of the same words would not be so. There must be a motive to injure another, or malice, and a publication or making known of defamatory matter to constitute a L.; and the rules and decisions governing these conditions are both voluminous and very divergent in the various states. The axiom 'Truth is no libel' prevailed in many courts till the decision was rendered that the speaking, writing, or printing of an unquestionable truth or fact with a malicious motive was just as libellous as the utterance of a defamatory And within a few years a court has decided that the sending of a dunning message to another on a postal card, so that others than the addressee could read it, constituted a L., because the act tended to injure or defame the addressee, even if there was an indebted-A L. is (1) a civil or private injury actionable for damages, because it violates the inherent right of refutation; and (2) a public wrong or crime, because it tends to public detriment by disturbing the public peace or the good order of society. The general defenses to an action for L. are 'privileged communication' and 'justification.' The former derives its force from the federal constitution, which provides that senators and representatives shall not be questioned in any other place for any speech or debate in either house (U.S. Constitution, Art. I. Sec. 6). Hence, legislators, judges, and public authorities have immunity from prosecution

LIBELLULA-LIBERAL.

for L. uttered in the line of their duty and presumably for the public good. The defense of justification is a plea that the defamatory matter is true and therefore justifiable. The rulings on this plea are too numerous and diverse to be here given, but they have established the axiom 'The greater the truth the greater the libel.' Blackmail is a term now used as synonymous with extortion; it is a threat of L. or of defamation, whereby one person seeks to extort money from another, usually for an alleged prevention of an injury, most generally for an alleged suppression of a statement (either libellous or slanderous) tending to the injury of the person on whom the blackmail is levied. The statement may be true, or known or believed to be false. The term is equivalent to hush-money. (See Blasphemy.)

LIBEL'LULA AND LIBELLU'LIDÆ: see DRAGON-FLY.

LIBER, n. lī'ber [L. liber, the inner bark of a tree, a book]: the fibrous inner bark or bast of trees or plants: see BARK: BAST.

LIBER, lī'ber: one of a pair of deities, Liber and Libera, male and female, worshipped among the ancient Romans under varying forms and associations, but always with gross rites and wild revelry, as in the worship of Bacchus (q.v.) with whom L. was largely identified.

LIBERAL, a. lib'er-al [F. libéral—from L. liberalis, of or belonging to a freeman—from liber, free: It. liberale]: free in giving or bestowing; not mean; generous; not narrow-minded; tolerant of the opinions and practices of others; not literal or strict; in OE., free to excess; licentious: N. party name, in politics, denoting one who advocates the extension of popular rights or influence (see LIBERALS, in Politics). In theol. denoting 1. a class who, with the German rationalists, deny the supernatural in revelation and in Christ-freethinkers in the popular sense of that word (see Freethinkers: Deism: RATIONALISM: INFIDELITY); 2. a class of Christians of which the evangelical Unitarians and Universalists are types; 3. a class who, mainly agreeing with the standard doctrines of the church in their own belief, do not make those doctrines the test of fellowship-e.g., Latitudinarians (q.v.), and the modern Broad Church (q.v.). LIB'ERALLY, ad. -li, largely; bountifully. LIB'ERAL'ITY, n. -i-ti [F. libéralité]: the disposition of mind to give freely or largely according to means; generosity; impartiality; candor; catholicity; largeness of mind. Lib'-ERALISM, n. -izm, the principles or tenets of a liberal. LIB'ERALIZE, v. -īz, to make liberal; to imbue with a large and catholic spirit; to free from narrow views and prejudices. LIB'ERALI'ZING, imp.: ADJ. having the tendency to free from narrow views and prejudices. Lib'-ERALIZED, pp. -īzd. LIBERAL ARTS, those which depend more on mental than manual labor, as painting, music

LIBERALS-LIBERIA.

etc. LIBERAL EDUCATION, an education extended beyond the mere requirements of life, and befitting a freeman or gentleman.—Syn. of 'liberal, a.': bountiful; munificent; free; profuse; large; lavish; beneficent; ample; openhearted; enlarged; catholic.

LIB'ERALS—LIB'ERAL PARTY, in English Politics: see Whig and Tory.

LIBERATE, v. lib'er-āt [L. liberātus, made or set free—from liber, free]: to free; to release from restraint. Lib'erating, imp. Lib'erated, pp. Lib'erator, n. -ā-tċr, one who frees or delivers. Lib'era'tion, n. -ā'shŭn [F.—L.]: the act of delivering, or state of being delivered, from restraint.—Syn. of 'liberate': to release; rescue; deliver; discharge; manumit.

LIBERIA, lī-bē'rĭ-a: negro republic on the Grain Coast of Upper Guinea, w. Arrica. The territory extends from long. 5° 54′ to 12° 22′ w.; length of coast about 600 m., average breadth of the territory about 100 An association, of which Henry Clay (q.v.) was pres., styled the American Colonization Society, was formed 1816, Dcc. 31, for the purpose of founding a colony of emancipated negroes, and of giving them favorable opportunities of self-improvement. The first attempt failed, in consequence of the selection of an unhealthy locality; but 1821, Dec., a treaty was concluded with native African chiefs, by which a suitable tract of land was acquired. The assoc. immediately commenced operations, and allotted to each man 30 acres of land, with the means of cultivating it. A town, Monrovia, was founded at Cape Mesurado; the boundaries of the colony were enlarged by the purchase of new tracts; and a second town, Caldwell, named from the originator of the assoc., was founded on the river Mesurado. Settlements were afterward formed at Cape Monte and in the newly acquired Bassa Land, in which, 1834, a town was founded, called Elina, in acknowledgment of pecuniary aid from Edinburgh. Many of the neighboring chiefs were received into the colony, while others were subdued. In 1847, L. was left to its own resources, declared an independent republic, and the government committed to a president, senate, and house of repre-The president and the representatives are elected for two, and the senators for four years, all citizens being qualified electors when they reach 21 years of age, and possess real estate. The judicial power is vested in one supreme and several subordinate courts. Slavery and the slave-trade are prohibited, and the right of petition established. Whites are excluded from rights of citizenship, but this is only a temporary measure. The prosperity of the colony soon became very obvious; churches and schools were founded in greater proportion to the population than in most parts of Britain or America; a regular postal system was established, newspapers published, and slavery in the neighboring states abolished.

Negroes from the neighboring regions, settling in the republic and submitting to its laws, were admitted to participation in civil and political freedom equally with the colonists. The new republic was recognized by Britain 1848, and since by other European powers. The British govt. made it a present of a corvette of war with four guns. The prosperity and usefulness of L. have continued to increase, but the number of settlers from N. America has never been great in any year, and the whole number of them in the country is reckoned not to exceed 19,000. Thus as regards the chief element in its original design—the gradual extinction of slavery in the United States by deportation of the slaves—the republic has utterly failed; while independently it has had high success, and is a most hopeful nucleus of Christian civilization in the Dark Continent. Additional negro tribes, are from time to time included within its territory, and about 50,000 have acquired the English language, of whom about 3,000 are members of the Christian Church. Agriculture is carried on with increasing Sugar is the principal article of produce, also of manufacture. Cocoa, cotton, coffee, arrowroot, and rice are cultivated. Lime is made from burnt shells. Trade is rapidly extending, and palm-oil, ivory, golddust, camwood, wax, coffee, indigo, ginger, arrowroot, and hides are among principal articles of export. chief export to Britain is palm-oil, and the chief import thence is cotton-goods. Revenue and expenditure, each about \$125,000 a year. The capital is Monrovia (pop. about 4,000). Total pop. of L., native and immigrant, estimated 1,050,000.

LIBERIUS, lī-bē'rĭ-ŭs, Pope of Rome: b. early in the 4th c., d. 366 (pope 352-366, with an interval of more than two years); b. Rome. He succeeded to the papal see at the death of Julius I. His pontificate was in the stormiest period of the semi-Arian controversy: see ARIUS. Emperor Constantius supported the semi-Arian party with all his authority; and the council of Arles 353, and that of Milan 355, formerly condemned Athanasius (q.v.), the great representative of the orthodox L. refused to confirm this decree, and, even in opposition to the personal commands of Constantius, withheld his subscription. He was in consequence deposed and banished to Berea by the emperor, who caused a Roman deacon, Felix, to be elected and consecrated in his stead. The later history of L. is a subject of controversy. He was restored to his see in 358, but the precise terms on which he was recalled are disputed: it seems beyond doubt that he yielded so far as to subscribe the third Sermian formula giving up the 'homoousion.' He died at Rome in high repute for sanctity. His only remains are some letters preserved by Constant in Epistolæ Romanorum Pontificum. During his life. many spurious letters and decrees were circulated in his name.

LIBER PONTIFICALIS—LIBERTINE.

LIBER PONTIFICALIS, lī'ber pŏn-tī-fī-kā'līs: history of the popes of Rome, professing to extend from the apostle Peter to Nicholas I. (867), with subsequent extension to Stephen VI. (891). The earliest known copy dates from the end of the 7th or beginning of the 8th c. Earlier portions of it were compiled from materials which were written probably before 366. Later additions have been made.

LIBERTARIAN: see under LIBERTY.

LIBERTICIDE, n. lǐb'ér'tǐ-sīd [L. libertas, liberty; cædo, I cut or kill]: a destroyer of liberty; destruction of liberty.

LIBERTINE, n. lib'er-tin or -tin [F. libertin, a freedman—from L. libertīnus, a freedman—from libero, I set free: It. libertino-lit., a freedman]: one who disregards the restraints of religion; a man who leads a licentious life; one living without restraint: ADJ. unrestrained; licentious. Lib'ertinism, n. -izm, debauchery; licentiousness of opinion or practice. LIBERTINES, THE (or SPIRIT-UALS), odious sect that arose in Flanders and appeared in the Reformed Church of France, 16th c. They held a sort of pantheistic rationalism, which they developed into Antinomianism on the ground that not anything is in itself bad, since all things are in God, and man's natural passions are the voices of the Spirit. Coppin of Lille seems to have started the sect about 1529, but other leaders soon took his place. Calvin publicly attacked the L. 1545 and 47, and they disappeared not long afterward .- L. was the name also of a political party of native burghers in Geneva who made the city independent, and invited Calvin to introduce there the Reformation, but later turned against his severe moral reforms as a new tyranny.—L. in Acts vi. 9 were probably Jews (or descendants of Jews) who had been captured in war and sold as slaves in Rome, but had been freed and had returned to Jerusalem, and were maintaining a synagogwo.



Concave or Plano-concave Lens.



Concavo-concave



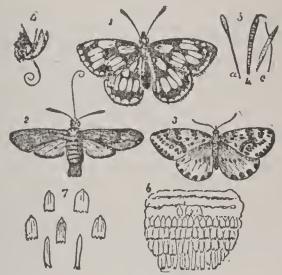
Concavo-convex Lons.







Convexo-concave Lens. Convexo-convex Lens. Convex or Plano-convex Lens.



Lepidoptera.—1, Butterfly—*Hipparchia galathea*, marbled white butterfly. 2, Hawk-moth or sphinx—*Macroglossa stellatarum*, humming-bird hawk-moth. 3, Math—Abraxas grossulariata, magpie moth. 4, Palpi and spiral mouth of butterfly. 5, Antennæ—a, Butterfly's; b, Sphinx's; c, Moth's. 6, Portion of wing of cabbage-butterfly, with part of the scales removed. 7, Scales of ditto, magnified.



Lichen. — Reindeer-moss (Cenomyce rangiferina).



Lewis.

LIBERTY, n. lib'er-ti [F. liberté-from L. libertatem, liberty-from liber, free: It. liberta]: freedom from restraint; the enjoyment of civil, political, and religious rights; privilege; leave; license; permission; freedom or power of choice, as opposed to necessity; neglect, or supposed neglect, of the observance of the laws of propriety and courtesy, as to take a liberty: in English law, a franchise, or portion of the royal prerogative delegated to a subject: also a privileged dist. in a county exempt from the sheriff's jurisdiction. THE LIBERTIES, -tiz, as of a city, the limits within which certain privileges or immunities are enjoyed. At liberty, free; unrestrained. LIBERTY, in Theology (see FREE-WILL). LIBERTY OF THE PRESS, freedom to print and publish without legal control and interference (see Press, Liberty of: Liber). Lib'erta'rian, a. $-t\bar{a}'r$ i- $\bar{a}n$, pertaining to the doctrine of free-will, as opposed to the doctrine of necessity: N. one who holds to the doctrine of free-will. LIB'ERTA'-RIANISM, n. -an-izm, the principles or doctrines of free-

LIBERTY, Religious: natural right, which is inalienable in every human being, to form his religious opinions and to offer his worship and to conduct his religious activity according to his own judgment and conscience. The U.S. constitution provides for religious liberty by two of its articles: 'No religious test shall ever be required as a qualification to any office or public trust under the United States': 'Congress shall make no law respecting an establishment of religion or prohibiting the free exercise thereof.' Similar provisions are in the constitutions of the several states. Concerning these provisions, two classes of considerations are to be noted. On one hand, they do not, and indeed cannot separate the state from all possible relation to religion—nor even from all possible connection with religion; since it is impossible to separate the state from all connection with any important interest of its citizens such as religion, science, education, commerce: but these provisions utterly separate the government from all religious organizations, e.g., churches and the like. On the other hand, they confer no such freedom of worship or of religious activity as includes the right to form organizations called religious which shall not be amenable to the civil government: government, finding any form of religious action injurious to public peace and the general liberty, may suppress it.

LIBERTY, STATUE OF: on Liberty (formerly Bedloe's) Island, New York harbor; designed by Frederic Auguste Bartholdi, French sculptor; paid for by contributions of the French people; and presented to the United States as an additional bond of political and commercial friendship between the two republics. The sculptor conceived the project 1835; the French-American Union was formed to promote the undertaking 1874; the actual modelling was begun 1875; the right hand and

arm were exhibited at the Centennial exhibition in Philadelphia 1876, and afterward erected on Madison Square. New York; and the head was erected in the Paris ex-The cost of the work was raised in hibition 1878. France by popular subscription and an authorized lottery; 1884, July 4, the completed statue was officially presented to the United States through the U. S. minisfer to France. It was then taken apart for shipment to New York, where it was received with much ceremony 1885, June 17. In 1876 an American committee was formed to co-operate with the French-American Union; 1877, Feb., congress accepted the tender of the gift and set apart Bedloe's Island for its location; 1883 work on the pedestal was begun; and 1886, Oct. 28, the statue was formally dedicated. The statue cost about \$250,-000, and the pedestal about \$300,000. The statue is 116.44 ft. high to top of diadem, and 151.14 ft. from base to top of torch; the pedestal is 90 ft. high above its base; total height of pedestal and statue above water 305 ft. 11 inches. The statue is officially a U.S. light-The torch is provided with a circle of powerful electric lights, and a second series of lights is arranged at the base, flooding each side of the pedestal with glaring light.

LIBERTY, EQUALITY, FRATERNITY: three words that for nearly a cenutry have been accepted as embodying the creed of those who maintain the rightful supremacy of the numerical majority; and that were sounded as the watchword of that formidable movement on the continent of Europe, 'the Revolution,' whose object was and is to assert this supremacy by overturning the existing fabric of society. When contrasted with the democratic creed of antiquity, the only novelty which the modern symbol exhibits consists in the proclamation of 'equality;' for 'liberty,' in the widest sense—meaning thereby the ultimate extension of political power to the whole body of the citizens—has been the object of the most enlightened politicians of all ages; while the protest in favor of 'fraternity' is a mere sentimental commonplace, about whose speculative soundness in some possible mode of its application there never was any real difference of opinion.

The first state document of importance in which the doctrine of equality is set forth is the American Declaration of Independence, 1776, July 4. This celebrated document proceeds thus: 'We hold these truths to be self-evident: that all men are created equal; that they are endowed by their Creator with certain unalienable rights; that among these are life, liberty, and the pursuit of happiness, etc.' But as a speculative opinion, the doctrine of equality had been proclaimed by Hobbes more than a century before, and from his time till the period at which it thus received practical recognition, it had never been lost sight of by the class of speculative thinkers to which Hobbes belonged. Under different

LIBERTY.

forms, and from various points of view, it has been reasserted by Spinoza, Rousseau, Helvetius, and ultimately by the class of political declaimers whose works were simultaneous with the American, and immediately pre-

ceded the French Revolution.

Hobbes was bolder than his followers, and by assuming a premise which, had it been true, would certainly have justified his conclusion, saved his logic, though he did not secure a very stable foundation for his law. He asserted that men are not only born, but continue in essentials very nearly equal. 'Nature,' he says, 'has made little odds among men of mature age as to strength and knowledge.' Rousseau, on the other hand, feeling that subjective and objective experience would at once repudiate such an assumption, admitted the existence of inequalities in maturity, and scarcely ventured to deny them even at birth, but ascribed them mainly to education, and to other distorting and deranging principles in human nature and human society, which it is the object of law and government to counteract. A third class of reasoners, admitting the fact of inequality, and not condemning it as abnormal in the case of individuals, asserted that the argument in support of social and political equality is sufficiently founded on the generic equality of mankind—on the proposition, viz., that all men are equally men. They forgot, or found it convenient to ignore, that the argument of their opponents rested on the proposition, that all men are not equal men; and consequently would not have been in the slightest degree affected even by the admission of the generic equality for which they contended. To this last class belongs Prof. Ahrens, whose work on Natural Law has been used as the text-book in the École de Droit in Paris. But all these writers agree in maintaining the inalienable connection between equality and liberty; and in asserting that the realization of the latter must of necessity be in proportion to the completeness with which the former is realized. In Great Britian, hitherto, the opposite creed has prevailed. Experience, both subjective and objective, has led to the conclusion that in Sact men come into the world and continue during all their earthly sojourn extremely unequal in strength, intelligence, virtue, and worth. It is on this assumption that the whole fabric of the British liberties claims to So far from believing liberty to involve the fictitious recognition of an equality which does not exist, or the creation of an equality which is contrary to nature, the Briton holds it to necessitate the recognition of the inequalities which nature has established, and which God as the author of nature has decreed. Nay, further, he conceives its perfection to be in direct proportion to the completeness with which these inequalities are recognized, and their consequences, in the shape of property, social position, and the like, are vindicated by the political machinery of the state. Society in this view

LIBERTY OF THE SUBJECT.

is an organic structure, is cosmic, just so far as it recognizes these inequalities; and begins to be inorganic, chaotic; just so soon as it ignores them. In like manner, the political, which in this view is only the mirror of the social organization of a state, performs its appropriate function only when, and so far as, it truly reflects the inequalities which society has recognized and sanctioned: it must neither add to nor take from the facts which society presents to it. To cach it must assign his own, and nothing but his own; and his own politically is the place which society has already conceded to him. These views, which in a somewhat irregular manner have always been recognized and acted upon in England. have been thought out and systematized in recent years by John Stuart Mill and the class of politicians to whom in future the title of Progressive Conservatives may perhaps be applied. As to the immortal 'Declaration,' it was dealing not with theories of philosophy, but with facts concerning man in the sphere of law and government: in this sphere, with which it was its stern necessity to deal, it declares the divinely ordained equality of In proportion as Britain and America recognize this natural equality before the law and guarantee it to the humblest citizen, in that proportion will their governmental foundations be proved strong in the day of The true doctrine has been stated by no writer with greater force than by John Adams, friend and successor of Washington, and second pres. of the United The following passage is selected from many to the like effect in the recent edition of his works by his grandson, Charles Francis Adams: 'That all men are born to equal rights, is true. Every being has a right to his own as clear, as moral, as sacred, as any other being This is as indubitable as a moral government in the universe. But to teach that all men are born with equal powers and faculties, to equal influence in society, to equal property and advantages through life, is as gross a fraud, as glaring an imposition on the credulity of the people, as ever was practiced by monks, by Druids, by Brahmans, by priests of the immortal Lama, or by the self-styled philosophers of the French Revolution.' (VI. 454).

LIBERTY OF THE SUBJECT: general phrase in British usage denoting the right of the individual subject to do all things not specially prohibited by the law. In its widest sense, the phrase may be understood as comprising all the rights allowed by law to the subject; but what is generally understood is the liberty of the person, or of rights connected with the person—such as personal liberty or freedom from slavery, the right of free speech, liberty of conscience, liberty of the press, and constitutional liberty, or the liberty to influence and take part in legislation, which may be further subdivided into the limitation of the royal prerogative, the powers and privileges of parliament, the right of applying to

LIBETHENITE-LIBRA.

courts of law for redress of injuries, the right of petitioning the crown or parliament, the right of having arms for defense, the right of habeas corpus, etc. See these subjects under their respective titles.

LIBETHENITE, n. li-běth'i-nīt [from Libethen, in Hungary]: phosphate of copper, occurring in many coppermines in rhombic prisms, or in radiated masses of an olive-green color, resinous lustre, and brittle.

LIB'IDIB'I: see Dividivi.

LIBIDINOUS, a. lǐ-bǐd'ǐ-nǔs [L. libidinōsus, full of lust—from libīdo, inordinate desire: It. libidinoso: F. libidineux]: lewd, lustful. LIBID'INOUSLY, ad. -lǐ. LIBID'INOUSNESS, -nĕs, state or quality of being lustful.

LIBOURNE, *lē-bôrn'*: handsome town of France, dept. of Gironde, on the right bank of the Dordogne, at its confluence with the Isle, 20 m. n.e. of Bordeaux. It is one of the ancient *Bastides* or Free Towns, and was founded by Edward I., King of England, 1286. It has considerable trade in wines, spirits, grain, salt, and timber. Cotton-yarn, iron, leather, ropes, and nails are manufactured. Pop. (1881) 13,936; (1891) 17,867.

LIBRA, n. lī'brā [L. libra, a level or balance]: the balance, seventh sign in the zodiac, which the sun enters at the autumnal equinox in September, as at the first point of L. the ecliptic passes across the equator to the s. hemisphere. In med., when the abbreviation for libra is preceded by Arabic figures, avoirdupois weight is meant, and when by Roman numerals, troy weight or pint measure; in some countries a pound weight.

LIBRARIES.

LYBRARIES: collections of books in some considerable number.

Passing over the 'libraries of clay,' collections of inscribed bricks and tiles of the Assyrians and Babylonians, the first library, properly so called, of which we have any knowledge, is that which, according to Diodorus Siculus, was formed by the Egyptian king Osymandyas. The existence of this establishment, with its appropriate inscription, Psyches intreion—the storehouse of medicine for the mind—was long regarded as fabulous; but the researches of Champollion, Wilkinson, and other modern investigators, go far to prove that the account of Diodorus, though perhaps exaggerated, is at least based upon truth. A more celebrated Egyptian library was that founded at Alexandria by Ptolemy Soter, for an account of which see Alexandrian Library. The library of Pergamus, a formidable rival to that of Alexandria, was founded probably by Attalus I., and was largely increased by the fostering care of his successors: it was ultimately removed to Alexandria, being sent by Antony as a gift to Cleopatra. At the time that this transfer took place, it contained, according to Plutarch, 200,000 volumes.

The first public library established at Athens is said to have been founded by Pisistratus; but information regarding this and other Grecian L. is meagre. The earliest Roman L. were collected by Lucullus and by Asinius Pollio. The latter was a public library, in the fullest sense; the former, though private property, was administered with so much liberality as to place it nearly on the same footing. Various other L. were founded at Rome by Augustus and his successors; the most important, perhaps, being the Ulpian Library of Emperor Trajan. The private collections of Emilius Paulus, Sulla, Lucullus (already mentioned), and Cicero, are

known to classical students.

The downfall first of the Western, subsequently of the Eastern Empire, involved the destruction or dispersion of these ancient libraries. The warlike hordes by whom these mighty monarchies were overthrown, had neither time nor inclination for cultivation of letters; but even in the darkest of the dark ages, the lamp of learning continued to shine with steady though feeble light. Within the sheltering walls of the monasteries, the books which had escaped destruction, the salvage of the general wreck, found safe asylum; and not only were they carefully preserved, but so multiplied by the industry of the transcriber, as to be placed beyond all risk of loss for the future. Among noticeable conventual L. of the middle ages are those of Christ Church, and of the monastery of St. Augustine, Canterbury, England; of the abbeys of Fleury and Clugni, France; of Monte Cassino, Italy; and of St. Gall, Switzerland. Private collectors, too, existed then as now, though their number was small. Among these, Richard de Bury, Bp. of Durham, holds distinguished plan

LIBRARIES.

The revival of learning in the 14th and 15th c., followed immediately by the invention of printing, led naturally to a vast increase in the production of books, and introduced a new era in the history of L. intended for a use more or less general. The number of these is now immense: only a few—the most important—are here noted.

First among the L. of Great Britain, and ranking perhaps second in the world, is that of the British Museum, with 1,500,000 printed vols., beside vast numbers of tracts, pamphlets, 50,000 manuscripts, 45,000 charters; for an account of this magnificent collection, see British Museum. Next in rank in Britain is the Bodleian Library at Oxford, with about 400,000 printed vols., and nearly 30,000 in manuscript: see Bodleian or Bodleyan LIBRARY. The third and fourth places are occupied by the Public, or University, Library of Cambridge, and the Library of the Faculty of Advocates at Edinburgh, which are nearly equal in extent and value: for the latter, see Advocates' Library; it now contains not less than 265,000 volumes. The Library of Trinity College, Dublin, about 192,000 vols., is the largest and most valuable in Ireland. These five L. have long been, and still are, entitled by statute to a copy of every book published in the empire. Besides the above, the six following L. had had same privilege till 1836: Edinburgh University, 140,000 vols.; Glasgow University, 125,000 vols.; St. Andrews University, 70,000 vols.; Aberdeen University, 50,000 vols.; King's Inn's, Dublin, 60,000 vols.; Sion College, London, 55,000 vols. The minor L. of Great Britain are very numerous. Among those specially notable are Library of the Soc. of Writers to the Signet, Edinburgh, more than 70,000 vols.; Hunterian Library, Glasgow, about 13,000 vols., including many choice specimens of early printing; Chetham Library, Manchester, more than 18,000 vols.; Dr. Williams's Library, Red Cross street, London, more than 20,000 vols., freely open to the public; Archiepiscopal Library at Lambeth, at least 27,000 vols.; Marsh's Library, Dublin, about 18,000 vols.; Library of the Dublin Royal Soc.; and L. belonging to the different colleges at Oxford and Cambridge, some of which are of considerable extent and value. several great towns are flourishing public libraries.—See ITINERATING LIBRARIES.—See Transactions and PROCEEDINGS of the Library Assoc. of the United Kingdom, and its Monthly Notes. Of private L. in England, that of Earl Spencer, at Althorp, has more than 50,000 vols., many of extreme rarity and value.

The great national library of France, formerly La Bibliothèque du Roi, now La Bibliothèque Nationale, is probably the largest and most valuable collection of books and manuscripts in the world. Attempts to form a library had been made by Louis XI. and his successors with considerable success; but the appointment of De Thou to the office of chief librarian by Henry IV. may be regarded as the foundation of the establishment as it

aow exists. The number of printed vols. is estimated nearly 2,300,000, and of manuscripts about 80,000. Among L. of the second class in Paris, the Arsenal Library with 200,000 vols., the Library of Ste. Geneviève with 120,000 and the Mazarine Library with 150,000, are the chief. Many excellent L. are in the provincial towns of France,

particularly Rouen, Bordeaux, and Lyon.

Italy is rich in important L., among which that of the Vatican at Rome is pre-eminent. The number of printed vols. is only about 220,000; but in the manuscript department the number is 25,000, the finest collection in the world. The Victor Emmanuel Library at Rome has 300,000, and the Casanata Library, also at Rome, is said to contain more than 130,000 vols. The Ambrosian Library, at Milan, has nearly 165,000 vols.; and the Brera Library, of the same city, about 163,000. At Florence is the Laurentian Library, consisting almost entirely of manuscripts; the National, 400,000 vols.; and the Magliabechi Library, about 200,000 vols. Among other notable L. of Italy are the Royal Library at Naples, 200,000 vols.; and that of St. Mark at Venice, with 260,000, and 10,000 manuscripts.

The principal L. of Spain are the Biblioteca Nacional at Madrid, nearly 430,000 vols., and the Library of the Escorial, 20,000 vols. mainly Arabic: see Escurial.—Of the L. of Portugal, no trustworthy statistics can be ob-

tained.

The Imperial Library at Vienna, founded by Emperor Frederick III., 1440, is a noble collection of not fewer than 440,000 vols.; of which 15,000 are of the class called incunabula, or books printed before 1500; and the National at Buda-Pesth has 400,000 vols. The Royal Library at Munich owes its origin to Albert V., Duke of Bavaria, about the middle of the 16th c.; number of vols. estimated 900,000, including 13,000 incunabula, and 22,-000 manuscripts: it is worthily lodged in the splendid building erected by the late king, Ludwig I., in the Ludwig Strasse. The Royal Library at Dresden has about 500,000 vols., including some of the rarest specimens of early printing, among them the Mainz Psalter of 1457, the first book printed with a date. The foundation of the Royal Library at Berlin dates about 1650; it now contains about 750,000 vols. printed, and 15,000 vols. manuscript. Germany has many other L., among them that of the University of Göttingen, more than 400,000 vols.; the Ducal Library of Wolfenbüttel, about 300,000; and the university library at Strassburg, founded not till 1871, but with 513,000 books and manuscripts in 1882. The Grand Ducal of Darmstadt has 450,000 vols.; University at Leipzig, 400,000 vols.; and the City at Hamburg 350,000 vols.

In Holland, the principal library is the Royal Library at the Hague, about 200,000 printed vols., of which about 1,500 are good specimens of early printing, and 4,000

manuscripts.

The Royal Ribrary at Copenhagen was founded about the middle of the 16th c.; estimated nearly 500,000 vols. The University Library has nearly 250,000 vols.; and Classen's Library, also in Copenhagen, about 30,000.

In Sweden, the largest library is that of the University of Upsala, nearly 250,000 vols.: one of its chief treasures is the famous manuscript of the Gothic Gospels of Ulfilas, commonly known as Codex Argenteus. The Royal Library at Stockholm numbers 250,000 vols.

The library of the University of Christiania in Norway,

founded 1811, has more than 230,000 volumes.

The Imperial Library of St. Petersburg was founded about the beginning of the 18th c. In 1795, it was largely increased by the addition of the Zaluski Library of Warsaw, seized and carried to St. Petersburg by Suwaroff. At present, the total number of vols. is estimated 1,000.

000, and about 35,000 manuscripts.

In the United States there has been a remarkable growth in the number and influence of L. in recent ears, stimulated by public legislation and private benefaction. The New England states were the first to attempt to establish a close relation between the public library and the public system of education, and in this effort Mass. led. The appreciation of this work in that state is attested by the following returns (1886-87): free public lending L. 176, vols. 1,819,723; free public reference L. 11, vols. 101,881; free corporate lending L. 48, vols. 301,030; L. of socs., assocs., and clubs 44, vols. 383,-726; subscription corporate L. 45, vols. 370,574; circulating L. proper (business investments) 38, vols. 94,411; total L. 352, vols. 3,071,345. Mass. has more free public lending L. than any other state, and New England more than any other geographical division of the country. A Mass. state law gives any town the right to apply the proceeds of the dog-tax to the formation and maintenance of a free public library within its limits. In N. Y. large sums of money have been appropriated by the state to aid district and public school L. For the encouragement of L. in the public schools, the course has been, under the law, to appropriate as much money annually to a school as it could raise among its pupils and friends during the year, thus adding an equal amount to the total of personal effort for equipment and books. success of this plan has placed the state ahead of all others in this particular, and led many others to adopt a similar course. In 1886 a general law was passed which provided that any incorporated library assoc. owning real estate worth \$20,000 and a library of 10,000 vols., and maintaining the same as a free lending library. might apply to the common council or other proper authority in its city for an appropriation based on the circulation of its books during the 12 months preceding the If the circulation was 75,000 vols., it might application. apply for \$5,000, and \$5,000 more for each addition of 100,000 to the circulation; but it was also provided that

LIBRARIES.

no library in New York should receive more than \$40,000 annually for such circulation. Another form of free public library recently established in several states is based on legislative permission for any city to determine by popular vote whether its citizens will pay an additional percentage of tax on real-estate valuations annually for the organization and support of such free public library.

In 1896, according to the reports of the U.S. Bureau of Education, there were reported 2 public, society and school libraries of over 500,000 vols., 32 of from 100,000 to 500,000, 635 of from 10,000 to 100,000, 3,357 of from 1,000, to 10,000, and 3,158 of from 300 to 1,000, making a total of 7,184 libraries having 34,596,258 volumes. The figures by states

were as follows:

Chahan	1000 volumes and over.		nes per pop.	300 to 1,000 volumes.	
States.	Li- braries.	Volumes.	Volumes 100 pop	Li- braries.	Volumes.
United States	4,026	33,051,872	47	3,158	1,544,386
North Atlantic Maine New Hampshire Vermont Massachusetts Rhode Island Connecticut New York New Jersey Pennsylvania	2,000 93 192 67 494 74 154 572 94 330	17,647,723 542,666 505,800 359,213 5,450,397 580,305 1,102,082 5,251,347 801,152 2,964,761	91 81 152 109 204 152 134 80 49 51	912 34 75 33 136 16 63 282 116 157	496,441 19,145 40,176 16,039 76,041 8,807 32,487 160,124 60,684 82,938
South Atlantic Delaware Maryland Dist. Columbia Virginia West Virginia North Carolina South Carolina Georgia Florida	3:3 14 67 55 50 10 40 32 41 13	4,647,723 83,763 985,330 1,793,910 341,225 46,137 218,757 232,418 270,041 43,506	43 47 90 632 20 6 13 19 14 9	176 7 26 9 37 18 22 18 31 8	84,852 4,174 12,817 4,913 17,490 9,426 10,157 8,100 13,842 3,913
South Central Kentucky. Tennessee. Alabama. Mississippi Louisiana. Texas. Arkansas Oklahoma. Indian Territory.	255 47 62 28 31 27 39 17 2	1,360,451 318,661 318,571 117,337 166,870 212,828 131,222 87,600 5,157 2,205	11 16 17 7 12 18 5 7 4	242 48 51 19 30 14 51 22 1 6	115,504 22,657 23,897 9,178 13,744 6,900 26,257 9,806 600 2,465
North Central Ohio. Indiana. Illinois. Michigan Wisconsin Minnesota.	1,195 202 107 214 153 102 75	8,016,780 1,587,891 654,651 1,822,580 975,031 626,442 667,397	32 41 29 43 42 32 28	1,043 144 88 134 127 87 79	510,154 68,529 41,258 66,992 66,241 43,416 41,539

States.	1000 volumes and over.		nes per pop.	300 to 1,000 volumes.	
	Li- braries.	Volumes.	Volumes 100 pop	Li- braries.	Volumes.
North Central (cont'd): Iowa. Missouri. North Dakota. South Dakota. Nebraska. Kansas. Western. Montana. Wyoming. Colorado. New Mexico. Arizona. Utah. Nevada. Idaho. Washington. Oregon. California.	113 104 6 14 42 63 254 13 4 34 6 4 11 6 5 20 16 35	607,765 686,955 23,682 34,863 226,743 302,780 2,011,831 69,222 23,785 300,990 13,273 17,472 49,582 49,989 13,023 76,646 90,190 1,307,659	30 23 7 7 15 13 52 32 26 55 8 26 19 111 10 13 23 94	139 193 17 12 36 72 785 9 1 21 4 2 13 2 10 22 699	65.550 50.924 7,463 5,425 18,495 34,322 337,455 5,790 450 10,071 2,237 1,272 6,427 600 900 4,973 10,091 294,644

In 1900 the same authority published reports from 5,382 public, school, and society libraries having 1,000 volumes and upward each, the total number of volumes being 44,591,851, and bound pamphlets 7,503.588, an increase in less than five years of 1,357 such libraries and 11,539,979 volumes. There were 4 libraries having over 500,000 volumes each, 3 between 300,000 and 500,000, 47 between 100,000 and 300,000, and 3,654 having less than 5,000 each.

The leading free circulating libraries in the United States

(1896) are given in the table at top of next page.

Among the other large libraries are the following: Cal. State, 100,032 vols.; Sutro, San Francisco, Cal., 200,000; Yale University, 210,000; Congressional Library, Washington, D. C., 740,000; Newberry, Chicago, 135.244; University of Chicago, 305,000; Peabody Institute, Baltimore, 124,501; Harvard University, 460,000; Princeton University, 102,000; New York State, 320,710; Cornell University, 180.600; Columbia University, 220,000; Mercantile, New York, 252,954; Pennsylvania State, 118,000; Library Co. of Philadelphia, 188,625; Mercantile, Philadelphia, 177,000; University of Pennsylvania, 140,000.

The first library established in the United States was that of Harvard Univ. 1638, which 1887,88 contained 248,621 volumes. The library of Yale Univ. was established 1700, and 1887-88 contained 135,000 volumes. The Library of Congress, established 1800, contained 1888 more than 575,000 bound vols. and 180,000 pamphlets. The most noted public L. founded by individual bequest are the Astor and Lenox in New York; Watkinson Library of Reference in Hartford; Peabody Institute Library

LEADING FREE CIRCULATING LIBRARIES IN THE UNITED STATES.

City. Name. Volumes. Circulation. San Francisco, Cal. Hartford, Conn. Waterbury, Conn. Chicago, Ill. Public. 50,000 207,685 207,685 71,005 71,005 71,005 71,005 71,005 71,005 1,147,862 71,005 1,147,862 71,005 1,147,862 71,005 1,147,862 71,005 1,147,862 233,776 81 131,691<				
Hartford, Conn. Public. 50,000 71,005	City.	Name.	Volumes.	
Providence, R. 1 Public	Hartford, Conn Waterbury, Conn Chicago, Ill Peoria, Ill Indianapolis, Ind Baltimore, Md Boston, Mass Cambridge, Mass Lowell, Mass Lowell, Mass Lynn, Mass New Bedford, Mass Springfield, Mass Worcester, Mass Detroit, Mich Minneapolis, Minn St. Louis, Mo Omaha, Neb Jersey City, N. J Newark, N. J Brooklyn, N. Y Cincinnati, O Philadelphia, Pa Providence, R. I	Public. Silas Bronson. Public. Public. Public. Enoch Pratt. Public. Public. Public. Public. City. Free Public. City Lib. Association. Free Public. Pree Public. Free Public. Free Public. Pratt Institute. Free Circulating. Mechanics and Tradesmen. Public. Free Public. Public. Free Public. Pratt Institute. Free Circulating. Mechanics and Tradesmen. Public. Free Public. Public.	50,000 51,954 217,065 57,604 62,270 166,854 630,961 50,128 58,000 53,825 51,991 70,000 93,374 105,000 159,360 84,000 109,663 51,420 50,275 55,002 90,138 59,788 81,785 108,000 188,409 105,308 75,559	207,685 71,005 1,147,862 131,691 233,776 548,278 847,321 137,702 80,392 128,800 119,549 108,128 119,000 178,129 348,409 450,588 476,000 235,378 376,977 232,078 9 802 207,899 654,451 247,906 312,810 1,500,000 115,743

brary, and Enoch Pratt Free Public Library in Baltimore; Adolph Sutro Free Reference Library in San Francisco; Silas Bronson Free Public Library in Waterbury, Conn.; the Walter L. Newberry Free Public Library in Chicago, in course of organization (1890) on a bequest of \$3,500,000; and the Carnegie Public Library in Alleghany City, Pa. John Crerar bequeathed (1889) \$2,500,000 for a John Crerar Public Library in Chicago from which all sensational and skeptical publications should be excluded; the same year the bequest of about \$4,000,000 by Samuel J. Tilden for a public library in New York was declared invalid by the N. Y. courts; and 1890, Feb., Andrew Carnegie offered to give \$1,000,000—\$2,000,000 for a main library and four branches in Pittsburg, Pa.

LIBRARY, n. lī-brā-rǐ [F. librairie, a library—from mid. L. librāriă, a library: L. librāriām, a place to keep books in—from liber, a book: It. libraria, a library]: collection of books arranged in order; room or building containing them (see Libraries). Libraria, n. -brā-rī-ān, one who has the care of a library or collection of books. Libra'rianship, n. the office. Libraries Acts, in Britain, acts of parliament (1850-71) empowering rate-payers of any burgh, district, or parish, by a majority vote to establish libraries and tax the inhabitants for that purpose. Only 36 free libraries had been opened 1871; but 1883 there were 113, with 2,345,000 vols.—See J. D. Mullin's Free Libraries and Newsrooms (3d ed.

LIBRATE-LIBRI-CARRUCCI.

1879). MILITARY LIBRARIES, either garrison or regimental: the garrison L. are large collections of books, with newspapers, games, lectures, etc., in commodious rooms, intended to win soldiers from vicious haunts. Regimental L. are smaller, and accompany regiments in their various movements.

LIBRATE, v. li'brāt [L. librātus, levelled, balancedfrom libra, a balance: It. librare, to balance: to poise; to balance; to move, as a balance. LI'BRATING, imp. LI'BRATED, pp. LIBRA'TION, n. -brā'shun [L. librātiōnem]: the act of balancing or state of being balanced, as a balance before coming to rest; in astron., the balancing motion or trepidation in the firmament whereby the declination of the sun and the latitude of the stars change from time to time. It is also a term applied to an apparent irregularity in the moon's motion. The moon's librations (properly, apparent librations) are of three kinds—libration in longitude, in latitude, and the diurnal libration. If the moon's rotation in her orbit were uniform, as her rotation on her axis is, we should always see exactly the same portion of her surface, but as this is not the case, there are two narrow strips of surface extending from pole to pole, on the e. and w. sides, which become alternately visible; this is called the moon's longitudinal libration. The libration in latitude arises from the moon's axis not being perpendicular to her orbit, in consequence of which, a portion of her surface round the n. pole is visible during one half, and a corresponding portion round the s. pole during the other half of her revolution in her orbit. The diurnal libration hardly deserves the name, and is simply a consequence of the observer's position on the surface of the earth, and not at the centre: it consists in the gradual disappearance of certain points on one edge of the moon's disk as she approaches her culmination, and the appearance of new points on the opposite border as she deseends. The first and third of these librations were discovered by Galileo, the second by Hevelius. LIBRA-TORY, a. lī'bră-tér-i, moving like a balance, as it tends to an equipoise or level.

LIBRETTO, n. lī-brēt'tō [It. libretto, a little book—from libro, a book]: a book having the words of an opera or other extensive piece of music; the words themselves.

LIBRI-CARRUCCI, le'bre-kâr-rôt'che, Guillaume Brutus Ichius Timoleon, Count: French mathematician and biblographer: 1803. Jan. 2—1869, Sep. 28; b. Florence son of an Italian refugee condemned at Lyon 1313 for forgery. L.-C. became prof. of math. in the Univ. of Pisa, where he contributed to the Transactions of scientific societies a number of remarkable papers on The Theory of Numbers (1820); Some Points of Analysis (1823); The General Resolution of Indeterminate Equations of the First Degree (1826): etc.

After 1830, having been compromised in the political movements, he left Tuscanv and went to France as ref-

LIBRI CARRÜCCÎ.

ugee. He there found a patron in Arago (whom he afterward attacked in the most spiteful manner;; was naturalized, and in a short time elected member of the Acad. of Sciences, prof. of analytics at the Sorbonne, chief inspector of public instruction, and supt. of the state libraries. He was decorated with the Legion of Honor, and appointed editor of the Journal des Savants, etc. L's works at this period are varied and numerous. In particular may be mentioned History of Mathematical Science in Italy from the Renaissance to the End of the 17th Century (1838-41, 4 vols. 8vo.), in which he displayed much acuteness and erudition. He was, besides, a most determined bibliomaniae, and found means of collecting a library for himself, which contained such a rich stock of incunabula of all kinds, and of the greatest typographical curiosities, that several public sales, which he arranged for his own benefit, and of which each realized \$20,000 to \$25,000, did not in the least diminish his collection. The remarkable phenomenon of a library remaining complete in spite of repeated sales, caused L.-C. to be suspected of making use of his special position to abstract books an 1 valuable Mss. from the public libraries. A report had even been secretly prepared on the subject by the public procurator, and communicated to M. Guizot to await his decision. The objects abstructed 1842-47 were approximately valued at \$100,000. This document, dated 1848, Feb. 4, was found in the Foreign Office when the revolution broke out in that month. The case was immediately taken up by the courts, and after a long and careful examination, the accused, who had fled to England, was condemned, 1850, June, to ten years' imprisonment, to degradation, and the loss of his employments. This process made a great sensition, and gave rise to an immense deal of writing for and against the condemned. The most important was an article by Prosper Merimée, Le Procès Libri, in Revue des Daux Mondes (1852), for which the writer was imprisoned, as having, in defense of a 'book-stealer,' slandered and insulted the French judicature. L.-C. continued for two or three years to address letters and pump'hlets to persons in France exclaiming against his condemnation in the highest tones of injured innocence. The efforts of Merimée in behalf of L.-C., and a petition in his favor, addressed to the senate 1861, had the effect enly of bringing out still more damnatory facts regarding both hir his family. LIBRIFORM FIBRES, libri-faurm L. libri the inner bark of a tree; forma, shape]: in bot., the clengated cells of woody tissue.

LIBURNIA. lī-ber'nī-a: in anc. geog., a form rocky country along the n.e. coast of the Adriction is of the islands adjacent. The people, douotless of Illyrian origin, were a piratical race, whose ships were light and swift. The Romans adopted these vessels instead of the heavy and lofty Greek galleys, and by these Augustus is said to have gained the battle of Actium. In later times L. was incorporated with Dalmatia.

LIBYA, lib'i-a: name giver by the oldest geographers to Africa. In Homer and Resiod, it denoted the whole of this quarter of the globe, except Egypt; in Herodotus, occasionally, the entire continent; but it is also applied by others in a more restricted sense, to the n. part of the country, from Egypt and the Arabian Gulf westward to Mount Atlas. The great sandy tract, abt. 1,000 m. long, and 500 or 600 m. broad, of which the Sahara forms the principal part, was called the Libyan Desert. To what extent it was known to the ancients is not clearly ascertained. The Libyan Sea was the portion of the Mediterranean between the island of Crete and the coast of Africa.—See Africa.

LIBYAN, a. līb'ī-an [L. Libyus]: applied to a group of languages, spoken by tribes inhabiting the mountainous parts of Barbary.

LIBYANS, lib'i-anz: people of Libya, the anc. Gr. name for Africa, originating perhaps from the people who were found bordering Egypt on the w., and are now supposed to have been the Lubim or Lehabim of II Chron. xii. 3; xvi. 8; Nah. xii. 9. The L. appear as wandering tribes allied sometimes with Egypt, sometimes with Ethiopia, and under Cambyses included in the Persian empire. Herodotus classed all n. Africans as L.; but the Romans limited the term to the inhabitants of the region along the Mediterrancan, w. of Egypt to the Greater Syrtis: this was the Libya of Acts ii. 10. In remote antiquity the L. were civilized and powerful. See Africa: Egypt: Carthage: Cyrene.

LICA'TA: see ALICATA.

LICE, lie: the plu. of Louse, which see.

LICENSE, n., or Licence, n. li'sens [F. licence—from L. licen'tia, freedom, liberty—from licet. it is permitted]: leave; permission; authority; excess; contempt of law or of necessary restraint; permission to sell excisable articles, or to keep a house for the sale of malt liquors or of wines and spirits, etc.; in England, permission to marry without publication of barns. License in music, liberty taken by a composer in deviating from the rules of musical art, for production of some unusual effect: it is indicated sometimes by the word con licenza, though often the great composers, e.g., Mendelssohn, Bach, Hayden, omit these words. The

because is used in many cases to strengthen the harmony. LICENSE, v. to permit by authority; to anthorize to act in a particular character (see GAME: PUBLIC ECUTES: MARRIAGE: ALIEN: LICENSE—for Sale of Liquor). Incensing, imp.: Adj. granting a license to; that gives power or authority to sell alcoholic liquors. Li'censed, pp. -senst: Add. applied to an occupation which requires legal authority for its exercise, as a licensed hawker. LI'CENSER, n. -er, one who grants permission. LI'CENS-ABLE, a. -ā-bl, that may be permitted or authorized legally. LICENTIATE, n. lī-sĕn'shī-āt [mid. L. licentĭātus, licensed: one who holds a license to exercise a profession: among Presbyterians and some other denominations, person authorized by a presbytery or similar body to preach, and who is thus made eligible to a pastoral charge: in England, a medical man licensed by the College of Physicians. Licentiate is one of the four ancient university degrees. It is no longer in use in England, except at Cambridge, which confers the degree of licentiate of medicine. In France and Germany, however, where it is more general, a licentiate is a person who, having undergone the prescribed examination, has received permission to deliver lectures. The degree, as an honor, is intermediate between Bachelor of Arts and LICENSED VICTUALLER, one who holds a license to sell wines and spirits by retail. LICENSING COURT, court where the magistrates sit to grant licenses to publicans, grocers, etc. Poetic license, the liberty taken by poets to disregard facts, etc. Note.—In the use of the two separate forms license and licence, it would be well were license employed as the verb, and licence as the noun; similarly 'prophesy, v.' and 'prophecy, n.'; 'practise, v.' and 'practice, n.'; 'devise, v.' and 'device, n.' This however is not the common Amer. usage.

LI'CENSE, FOR SALE OF INTOXICATING DRINK: certificate issued by a competent state, co., municipal, or other civil authority for the sale of intoxicating beverages under the provisions of existing excise laws. object of a L. is not primarily for revenue, but for prevention of a free and indiscriminate traffic; and the act of licensing is the law's attempt to regulate and restrict the traffic which it has conditionally sanctioned. Within a few years the restriction of the liquor traffic has taken a powerful hold on the social and political life of the country. One of its first measures was the establishment of the National Prohibition Party, which 1872 received a popular vote for its presidential candidates of 5,608, and 1888 an aggregate of 257,243. The party declares that any form of license, taxation, or regulation of the liquor traffic is contrary to good govt.; that prohibition is the only remedy for the sin and crime of the traffic; and that no grade of compromise should be en-Against this extreme declaration, a large number of people belonging to both of the leading political parties, declining to favor the unrestricted sale of

LICENTIOUS-LICHEN.

intoxicating liquors on the one hand and prohibition on the other, prefer a middle course, and urge that the traffic be restrained and regulated by just and equitable excise laws, rigidly enforced. This conservative class has sought to carry out its views by attempting to secure the adoption of more stringent excise laws, which would accomplish a greater restriction of the traffic by raising the L. tax to such high rates that but few dealers, in comparison with the present number, could afford to pay for a L. One of the most beneficent objects to be gained by such a law, the wiping out of low cheap groggeries and the closing of combined liquor saloons and corner grocery stores, was used by the opponents of the measure in N. Y. and other states to defeat it. Against the adoption of a high license law, was urged its unconstitutionality, in that it discriminated between the rich and the poor dealer, and tended to give a few rich dealers a monopoly of the business, 'a clear violation of individual rights.' Another conservative class has sought a solution of the problem through legislative aid by having the residents of a state, city, or other community decide by special vote whether the traffic should be prohibited, licensed at ordinary rates, or licensed at high rates within their corporate limits. Thus, three forms of legislation to promote temperance have been provided in the United States, prohibitory, restrictive, and optional. The results to 1890 are in brief; Me., Io., Kan., N. Dak., and S. Dak., are absolute prohibition states by constitutional provision; N. H., Mich., R. I., Mass., Conn., Penn., and V.ash., rejected prohibition amendments by large majorities 1889; Ill., Minn., and Penn., have high license laws: and Tenn., Ky., Mo., Ark., La., Tex., Miss., Ala., Ga., N. C., S. C., Va., W. Va., Md., and Minn. have adopted local-option laws since 1870. O. defeated prohibition amendment 1883; Tenn. and Tex. 1887. In N. Y. high-license bills, 1887, 88, were vetoed by Gov. Hill.—See Liquor Law, Raines.

LICENTIOUS, a. lī-sĕn'shŭs [L. licen'tĭōsus, unrestrained—from licen'tĭā, freedom: F. licencieux]: immoral; profligate; unrestrained by law or decency. Licen'tiously, ad. -lī. Licen'tiousness, n. -shŭs-nĕs, the state of being licentious; dissoluteness.—Syn. of 'licentious': dissolute; abandoned; reprobate; unprincipled; deprayed; unrestrained; uncurbed; uncontrolled; riotous; unruly; wanton; ungovernable; loose; lax; sensual; lascivious; unchaste; impure.

LICHEN, n. lī'kĕn or līch'ĕn [L. līchen; Gr. leichēn, the lichen: connected with Gr. leichein, to lick, to lick up—so named from its encroachment]: one of the order of flowerless or cryptogamic plants found upon rocks and various bodies, commanly called rock or tree moss—but really consisting of a fungus parasitic on the green cells of an alga (see below): a disease of the skin. Lichenic, a. lī-kĕn'ĭk, of or partaining to lichens. Lichenin, n. lī'kĕn-ĭn, peculiar starch-like body, found in Iceland

LICHEN-LICHENS.

moss and other lichens, from which it is extracted by digesting the moss in a cold, weak solution of carbonate of soda for some time, and then boiling. By this process, the lichenin is dissolved, and on cooling, separates as a colorless jelly. According to Gorup-Besanez (Lehrbuch der organischen Chemie, 1860, p. 514), it sometimes assumes a blue, and sometimes a greenish tint, when treated with iodine. In most of its relations it corresponds with ordinary starch. Lichenous, a lī'-ken-us, of or belonging to the skin eruption called lichen (q.v. below).

LI'CHEN: a papular disease of the skin. two species, L. simplex and L. agrius, the latter regarded as a very aggravated form of the former. L. simplex consists in an eruption of minute papulæ of red color, which never contain a fluid, and are distributed irregularly over the body. They appear first on the face and arms, then extend to the trunk and lower extremities, and are accompanied with a sense of heat, itching, and tingling. In a mild case, the disease is over in a week, but sometimes one crop of papulæ succeeds another for many weeks or months. In L. agrius, the papulæ are more pointed at the summit, and are of a brightred color, with more or less redness extending round them. In this form of the disease, the general health is usually affected, in consequence of loss of sleep and general irritation. It is often hard to say what is the cause of lichen. The simpler form is often dependent in children on intestinal irritation, while in other cases it may frequently be traced to exposure to heat, or errors of diet. The severe form also is occasioned by extreme heat and by the abuse of spirituous drinks. In ordinary cases, an antiphlogistic diet, a few gentle aperients, and two or three tepid baths, are all that is re-When the disease assumes a chronic character, a tonic treatment (bark and the mineral acids) is necessary; and in very obstinate cases, small doses (three to five minims, well diluted) of Fowler's Arsenical Solution may be given with advantage.

LICHENOGRAPHY, n. lī'kĕn-ŏg'ră-fī [Gr. leichēn, the liehen; graphō, I write]: a description of liehens. Lī'-CHENOG'RAPHIST, n. -ră-fīst, one who writes on the natural history of lichens; also Lī'chenol'ogy, n. ŏl'ŏ-jī, and Lī'chenol'ogist, n. -jīst [Gr. logos, discourse]: with the same meanings.

LICHENS: natural order of acotyledonous plants, allied to Fungi and to Algæ. They are thallogenous, consisting mainly of a Thallus (q.v.), and without stem and leaves; wholly cellular, and nourished through their whole surface by the medium in which they live, which is air, and not water, though a certain amount of moisture in the air is always necessary to their active growth; and when the air becomes very dry, they become dormant, ready to resume their growth on return of favor-

LICHFIELD.

able weather. The thallus of some is pulverulent; that of others crustaceous; of others, leaf-like; of others,

Reproduction takes place by spores, usually

contained in sacs (asci, theca), embodied in repositories of various form, often shield-like or disk-like, called apothecia (or shields), which arise from the outer layer of the thallus, and are generally very different in color from the thallus. There is also another mode of propagation by gonidia, separated cells of the inner or medullary layer of the thallus, usually spherical or nearly so, and always of a green color. This seems a provision for the propagation of L., even in circumstances—as of the absence of light—unfavorable to the formation of thecæ and spores. L. are plants of long life, differing in this very widely from fungi. They are most widely diffused, growing equally in the warmest and the coldest regions. On the utmost limits of vegetation, in very high latitudes, or on the very highest mountains, they cover the soil in great masses. Some grow on earth, others on stones, others on the bark of trees, and some of the tropical species on evergreen leaves. In the great economy of nature, they serve for the commencement of vegetation, especially to prepare the soil for plants of higher organization. The gray, yellow, and brown stains on old walls are produced by minute L., which have begun to vegetate where nothing else could. The curiously scattered apothecia of some present the appearance of written characters often seen on the bark of Some hang as tufts or shaggy beards from old trees, some grow amid heaths and mosses to cover the soil of the most frigid regions. L. contain a peculiar gelatinous substance resembling starch, and called Lichenin or Lichen Starch; generally also a bitter substance called Cetrarine; resin; a red, bright yellow, or brown coloring matter; oxalate and phosphate of lime, etc.; and are therefore adapted to purposes of domestic economy, medicine, and the arts. Some are used for food, as Iceland Moss (q.v.) and Tripe de Roche (q.v.); some afford food for cattle, as Reindeer Moss (q.v.); some are medicinal, as Iceland Moss; some afford dye-stuffs, as Archil (q.v.), Cudbear (q.v.), etc. LICHFIELD, lich'fē'd: ancient episcopal city of Staffordshire, England, a municipal borough, 17 m. s.e. of Stafford, and 116 n.w. of London. Its chief edifice is the cathedral of the 12th or 13th c., part of which is in Early English style: it is 403 ft. in total length e. to w.; has three towers, each surmounted by a spire, the cen-

fordshire, England, a municipal borough, 17 m. s.e. of Stafford, and 116 n.w. of London. Its chief edifice is the cathedral of the 12th or 13th c., part of which is in Early English style: it is 403 ft. in total length e. to w.; has three towers, each surmounted by a spire, the central one 285 ft. high; and is profuse and elaborate in ornamentation. The Free Grammar-school, in which Addison, Ashmole, Johnson, and Garrick were educated, has nine exhibitions, tenable for three years. Considerable brewing is carried on. Pop. (1871) 7,347; (1881) 8,360; (1891) 7,864.

LICH-GATE—LICK

LICH-GATE, n. lich-gāt [Goth. leik; Ger. leiche; AS. lice, a corpse: Icel. lik, a living body; and Eng. gate—lit., corpse-gate]: the covered gate at the entrance to a churchyard where the corpse is set down to await the arrival of the officiating clergyman.

LICHTENBERG, *lich'ten-berch*: former small German principality on the w. bank of the Rhine—now forming the circle of St. Wendel in the govt. dist. of Treves, Rhenish Prussia, 210 sq. m.; pop. 45,000.

LICHTENFELS, *lich'ten-fels*: town in Greenland, founded 1758 by the Moravians or Bohemian Brotherhood. It is on the s.w. coast, lat. 64° n., long. 52° w. The people are chiefly Danes.

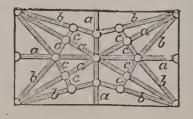
LICK, n. lik [Ger. lecken; Dut. likken; Gr. leichein; It. leccare, to lick or lap]: a passing or drawing of the tongue over; a taste by drawing the tongue over; in U. S., a salt-marsh or salt-spring to which wild animals resort: V. to pass the tongue over; to sup up liquids with the tongue; to take in with the tongue. Lick'ing, imp.: N. a drawing the tongue over the surface. LICKED, LICK'ER, n. -er, one who. pp. likt. LICK'SPITTLE, n. -spit'l, an abject flatterer or parasite. TO LICK THE pust, to fall in battle; to be completely prostrated. LICK INTO SHAPE OF FORM, to impart shape or method to -which expression is supposed to have arisen from the belief that the bear licked its young into shape. LICK UP, to devour entirely.

LICK, v. lik [W. llach, a slap; llachio, to slap]: in familiar language, to beat; to flog; to conquer in a fight: N. a blow; a buffet. Lick'ing, imp.: N. a beating. Licked, pp. likt.



Lich-gate, Clifton Hampton, Oxfordshire.





Lierne.—Plan of Groined Arch: a. Principal ribs; b, Tiercerons; c, Liernes.

LICK-LICKING.

LICK, lik, James: 1796, Aug. 25—1876, Oct. 1; b. Fredericksburg, Penn.: philanthropist. He received a common-school education; was apprenticed to the piano and organ making trade; established himself as a manufacturer in Philadelphia 1819, and New York 1820; went to Buenos Ayres 1820, and excepting a brief visit to Philadelphia 1832 carried on the manufacture of musical instruments there and in other S. Amer. cities till 1847: then settled permanently in San Francisco. He invested his entire fortune—about \$30,000—in real estate there, and its advance in value made him very wealthy. Though generally regarded as a man of solitary and avaricious habits, in 1874 he assigned real and personal property valued at about \$3,000,000 to seven trustees to be applied to various public and charitable enterprises. Before his death he made several changes in his deed of trust and designated new trustees; but the provisions finally set apart \$60,000 for the erection of a bronze mon ument to Francis Scott Key, author of the Star Spangled Banner, in Golden Gite Park, San Francisco; \$100,-000 for the erection of a group of bronze statuary in front of the City Hull, San Francisco, representing the history of Cal.; \$150,000 for the erection and support of free public baths in San Francisco; \$25,000 for the San Francisco Prot. Orphan Home; \$25,000 to build a non-sectarian orphan asylum in San José, Cal.; \$25,000 to the Ladies' Protection and Relief Soc. in San Francisco; \$10,000 to the Mechanic's Institute, San Francisco; \$100,000 to found an Old Ladies' Home in San Francisco; \$540,000 to found and endow the California School of Mechanical Arts; and \$700,000 for constructing an observatory and erecting therein a more powerful telescope than had ever been mide, the observitory to become a part of the equipment of the Univ. of Cal. (See LICK OBSERVA-TORY.) He retained \$500,000 for his own use, left \$20,-000 for family monuments, and divided the remainder among his relatives, giving from \$2,000 to \$150,000 cach. In 1837, Jan., his remains were placed in a vault at the base of the 30 ft. pier supporting the great telescope.

LICKERISH, a. lik'er-ish [F. lécher, to lick, to lap: Ger. lecker, a dainty-mouthed man (see Lick 1)]: in OE., nice in the choice of food; greedy to swallow; tempting the appetite; having a keen relish. Lick'erishly, ad. -li. Lick'erishness, n. -nes, daintiness of taste; niceness of taste. Note.—Another form in OE. was lickorous, etc., sometimes used in the sense of lecherous or voluptuous.

LICKING RIVER: rises in the Cumberland Mountains in Floyd co., Ky., flows n.w. about 200 m., and empties into the Ohio river at Newport, opposite Cincinnati; navigable for small steamboats to Falmouth, 60 m. Another L. R., also known as Pataskala, rises in the centro of O., flows s.e. 75 m., and emplies into the Muskingum at Zaresville.

LICK OBSERVATORY-LICORICE.

LICK OBSERVATORY: on the summit of Mount Hamilton, 13 m. e. of San José, Santa Clara co., Cal.; 4,343 ft. above sea-level; founded by James Lick (q.v.). After considering several sites, the founder agreed to have the observatory erected on Mount Hamilton if Santa Clara co. would build a suitable road connecting San José with the top of the mountain. The agreement was ratified by the co. authorities, a grant of land was obtained from the federal govt., and a road 26 m. long, with a rise of 4,000 ft. in 22 m., was completed 1876 at a cost of \$78,000. This road is a marvel of engineering The third of the three peaks of Mount Hamilton was chosen for the observatory, and was cut down to a level surface just large enough to contain the necessary buildings for the instruments. The whole of the s. end of the plateau of the summit is occupied by the great telescope. At the n.w. corner stands a dome completed 1881, Nov., which contains a Clark 12-inch telescope; a few feet e. of this is the house for the photo-heliograph; the great and smaller domes are connected by a onestory building containing a clock-room, workshops, library, offices, and bed-rooms for observers; and near the photo-heliograph is the building for the 6-in. meridian circle. A Clark comet-seeker and a 4-inch transit complete the list of meridian instruments. The main building is of brick. The great telescope with object-glass 36 inches clear aperture is the largest refractor in the world, the new one for the Russian govt. being only 30 inches. The objective has two lenses, a crown and a flint, for bringing the rays to a focus, and a third crown lens which can be placed in front of the other two for photographic purposes. The disk of flint glass was made by Grubb in Dublin and that of crown by Feil in Paris. Alvan Clark & Sons, of Cambridge, Mass., completed the objective, which cost \$60,000. The great dome, which has a diameter of 75 ft., is turned and raised by hydraulic power, and the floor is similarly elevated and lowered to accommodate the observer. The instruments in the observatory alone cost more than \$200,000, and \$590,000 were expended in erecting and equipping the observatory. The sum of \$20,000 per annum has been set apart by the regents of the Univ. of Cal. for the maintenance of the observatory, which was officially turned over to them by the Lick trustees 1888, June 1. Edward Singleton Holden, LL.D. was elected pres. of the Univ. and director of the observatory 1886.

LICORICE, or Liquorice, n. lik'er-is [OF. licorice—from mid. L. liquirit'iă—from L. glycyrrhi'za, licorice-root—from Gr. glukus, sweet; rhiza, a root: It. legorizia], (Glycyrrhiza): genus of perennial herbaceous plants of nat. ord. Leguminosæ, sub-ord. Papilionaceæ; having long, pliant, sweet roots, and generally creeping root-stocks; pinnate leaves of many leaflets, and terminating in an odd one; flowers in spikes, racemes, or heads; a 5-cleft, 2-lipped calyx, and a 2-leaved keel. The ancient Greek name,

LICORICE.

now the botanieal name, signifies sweet root, and from it, by corruption, L. and other modern names are derived. The roots (also commonly known as L.) depend for their valuable properties on a substance called Glycyrrhizine, allied to sugar, yellow, transparent, unerystallizable, soluble both in water and in alcohol, and forming compounds both with acids and with bases. They are a well-known article of materia medica, and were used by the ancients as in modern times, being emollient, demulcent, very useful in catarrh and irritations of the mu



Common Licorice (Glycyrrhiza glabra).

cous membrane.—The roots of the Common L. (G. glabra) are eliefly in use in Europe. The plant has stems 3-4 ft. high, and racemes of whitish violet-colored flowers. It is a native of s. Europe and of many parts of Asia, as far as China. It is cultivated in many countries of Europe, chiefly in Spain, and to some extent in s. England; where its cultivation is at least as old as the times of Elizabeth. The roots are extensively used by porter-They are not imported largely into Britain and the United States, but the black inspissated extract of them (Black Sugar or Stick Licorice, or Spanish Juice), is largely imported from s. Europe, in semi-vitreous rolls or sticks, packed in bay-leaves, or in boxes of about two ewts., into which it has been run.—L. is propagated by slips; and after a plantation has been made, almost three years must elapse before the roots can be digged up for use. The whole roots are then taken up. L. requires a deep, rich, loose soil, well trenched and

manurea; the roots penetrating to the depth of more than 3 ft., and straight tap-roots being most esteemed. The old stems are cleared off at the end of each season, and the root-stocks so cut away as to prevent overgrowth above ground next year. The plant is propagated by cuttings of the root-stocks.—The roots of the PRICKLY L. (G. echinata) are used in the same way, chiefly in Italy and Sicily, Russia, and the East.—The only American species is G. lepidota, which grows in the plains of the Missouri.

LICTOR, n. lik'ter [L. lictor, from ligārē, to bind; according to Aulus Gellius, because the lictors had to bind the hands and feet of criminals before punishing them]: among the anc. Romans, an official attendant of magistrates of the highest rank. Lictors carried the Fasces (q.v.) before the consuls, clearing the way, and enforcing the appropriate marks of public respect. It was their duty to execute the punishments ordered by the magistrates, such as scourging with rods, and beheading. They were originally free men of the plebeian order, and not till the time of Tacitus could the office be held by freedmen. Slaves were never appointed lictors.

LID, n. lid [AS. and Icel. hlid; O.H.G. hlit, a lid, a cover: Icel. hlid, an opening, a gap]: a movable cover, as of a box; the cover of the eye.

LID'DON, HENRY PARRY. D.D.: 1829, Aug. 20-1890, Sep. 9; b. Stoneham, England. He graduated from Christ-Church College 1851; was ordained deacon next year, and priest 1853; was vice-principal of the theological school, Cuddesdon 1854-59; and 1864 became prebendary in Salisbury Cathedral. He was Bampton lecturer 1863; and select university preacher at Oxford, 1863,70,77,84, and at Cambridge 1884. Oxford made him D.D. and Hon. D.C.L. 1870; the same year he became canon resident of St. Paul's, London, and Ireland prof. of exegesis at Oxford, which chair he held till 1882. He belongs to the strictly conservative ecclesiastical party in the Anglican Church, has a spirit of singular devoutness and fervor, is profoundly learned as a theologian, and as a preacher holds foremost rank. Of his many published works, the best known are Lenten Sermons, Bampton Lectures on The Divinity of Christ (1866); Thoughts of the Present Church Troubles (1881); and Easter in St. Paul's: Sermons on the Resurrection (1885, 2 vols.).

LIE, n. $l\bar{\imath}$ [Goth. liugan; Icel. $lj\bar{\imath}uga$; Ger. $l\bar{\imath}ugen$, to lie: AS. lygnian, to deny; lyge, a lie]: a statement not true; a falsehood: see Lie, in Law: V. to state that which is not the truth, and made with the intention to deceive; to tell a falsehood. Lying, imp. $l\bar{\imath}'ing$: Add. telling falsehoods: N. the practice of telling falsehoods. Lied, pp. $l\bar{\imath}d$. Liar, n. $l\bar{\imath}'e\bar{\imath}r$, one who habitually tells falsehoods. To give the Lie to, to charge with falsehood. Father

of Lies, Satan.—Syn. of 'lie, n.': fiction; deception; untruth; fib; falsity; misrepresentation.

LIE, v. $l\bar{\imath}$ [AS. licgan, to lie down; lecgan to put or set down: Goth. ligan, to lie; lagjan, to lay: Icel. liggia, to lie; leggia, to lay: Dut. liggen; Ger. liegen, to lie (see LAY)]: to rest lengthwise on or against; to press upon to rest; to remain; to be situated, as a county or town; to sleep; in law, to be sustainable; to be recorded for trial: N. in geol., the manner in which strata are disposed. LY'ING, imp. LAY, pt. lā, did lie. LAIN, pp. $l\bar{a}n$, or OE. Lien, pp. $l\bar{\imath}n$. Li'er, n. $-\dot{e}r$, one who rests or remains. To Lie at any one's mercy, to depend upon. To LIE AT ANY ONE'S DOOR, to be imputable to any one. To LIE AT THE HEART, to be fixed in the mind, as an object of affection or of deep anxiety or concern. To LIE BY, to be remaining with; to rest. To LIE DOWN, to dispose one's self for rest; to sink into the grave. To LIE IN, to be in childbed. To LIE IN ONE, to be in the power of. To LIE IN THE WAY, to be an impediment; to be in one's power, as, if it lies in my way. To LIE IN WAIT, to watch for an opportunity to attack or seize. To LIE ON or UPON, to be a matter of obligation or duty. To LIE ON HAND, to remain in possession without occasion for use. To Lie on the Hands, to remain unoccupied or unemployed. To LIE ON ANY ONE'S HEAD, to be imputable to any one. To LIE OVER, to remain unpaid; to be deferred to some future occasion. To LIE To, to retard or check a ship in its progress. UNDER, to suffer; to be oppressed by. To LIE UNDER ARMS, in mil., to be in a state prepared for immediate action. To LIE WITH, to sleep with; to have carnal knowledge of; to belong to. Note.-Lie and LAY-there seems to be an increasing tendency to confound these two verbs in their present and past tenses even among respectable writers. The error is a gross one, and ought to be carefully avoided. Lie is intransitive—that is, it cannot, as a rule, admit of an object after it without the intervention of a preposition. We say Lie, v., Lay, pt., LAIN, pp., LIEN, pp. in OE. On the other hand, LAY is transitive—that is, it can admit of an object after it. We say LAY, v., LAID, pt., LAID, pp. He told me to lie down, and I lay down; he told me to lay it down, and I laid it down, are correct expressions. He told me to lay down, he lays in his bed too long, here lays the body, are incorrect expressions. They should be-he told me to lie down; he lies in his bed too long; here lies the body.—Syn. of 'lie, v.': to abide; belong; pertain; consist; lodge; sleep.

LIE, n. lī: a spelling of Lye 1 and 2, which see.

LIE, in Law: not a ground of action, unless in peculiar circumstances. If, e.g., it is material, and is uttered by a witness or deponent, it is the criminal offense of perjury. Sometimes, also, if a person, knowing that another will act upon his information, tell a lie, which lie

LIEBER-LIEBIG.

is believed to be true, and acted on, and damagefollows, the party telling the lie may be sued for damages. But in other cases, lying per se is not punishable by law, civilly or criminally.

LIEBER, *lē'bėr*, Francis, ll.d.: 1800, Mar. 18—1872, Oct. 2; b. Berlin, Prussia. At the age of only 15 years he enlisted in the Waterloo campaign, and was wounded at Namur. He resumed his studies; became a liberal in politics; was accused of plotting against the government, and imprisoned. He was never brought to trial; was released, but not permitted to re-enter the Berlin gymnasia. 1820 he took his degree at Jena. Dresden he went to aid the Greeks in their struggle for independence, an account of which he published in his Journal in Greece (1823). In 1822 he entered the family of Niebuhr at Rome, with whom he returned to Berlin, was rearrested on the old charges, and imprisoned at Köpnick, but soon released through the influence of Niebuhr, whereupon he left Prussia forever, and went first to London, and, 1827, to America. 1827-32 he lived at Boston editing the Encyclopedia Americana; the next two years he spent at Philadelphia; 1835, he went to Columbia, S. C., as prof. of political economy in the S. C. University. His great works were produced there: A Manual of Political Ethics (1838); Legal and Political Hermeneutics (1839); and Civil Liberty and Self-Government (1853). Profound, logical, exhaustive, these works are recognized authorities. In 1856 he went as prof. of political economy to Columbia College, New York; the more willingly as his political ideas differed radically from those then prevalent in the south. He occupied the chair of political science in the Columbia law school until his death, his teachings going out far beyond the class-room through his numerous publications. In 1879. he was agreed upon by Mexico and the United States as arbitrator in an affair then pending between the two countries. Besides frequent contributions to European and American periodicals, and the works already mentioned, his most noteworthy publications were: Reminiscences of Niebuhr; Essays on Property and Labor; Laws of Property; Penal Laws and the Penitentiary System; Prison Discipline; Origin and Development of the First Constituents of Civilization, and Great Events Described by Great Historians. His miscellaneous writings were published, 2 vols. 1880; the first containing reminiscences, addresses, and essays; the second his contributions to political science, and other papers.

LIEBERKUHN, n. $l\bar{e}'b\dot{e}r-k\hat{o}n$ [after the inventor, $Lieber-k\ddot{u}hn$]: a metallic mirror attached to the object-glass end of a microscope for the purpose of throwing down light on opaque objects; a reflector.

LIEB'HARD, JOACHIM: see CAMERARIUS, JOACHIM. LIEBIG, lē'bich, Justus, Baron von: one of the greatest chemists of the 19th c.; 1803, May 12—1873, Apr. 18;

b. Dermstadt. He early showed strong predilection for nat, science. He studied at Bonn and Erlangen, and afterward in Paris, where he attracted the attention of Alexander von Humboldt by a paper on Fulminic Acid. This led to his appointment, 1824, as extraordinary prof., and 1826, as ordinary prof. of chemistry at Giessen, where he labored with great activity for more than a quarter of a century, making that small univ. a centre of attraction to students of chemistry from all parts of Germany and from foreign countries. Many honors were conferred on him. The Duke of Hesse raised him to the rank of baron. In 1852 he accepted a professorship in the Univ. of Munich, and the charge of the chemical laboratory there; and 1860 was appointed pres. of the Munich Acad. of Sciences, as the successor of Thiersch.

L. labored with success in all departments of chemistry, but particularly in organic chemistry, in which he made many discoveries, and greatly improved the methods of analysis. He investigated with great care the relations of organic chemistry to physiology, pathology, agriculture, etc.; and though many of his views have been combated, and several were abandoned by the author himself, it is, nevertheless, universally admitted that his researches have greatly advanced the science of agriculture in particular. Many of his papers are in Annalen der Chemie und Pharmacie. He published the Wörterbuch der Chemie (Brunsw. 1837-51) in conjunction with Poggendorf, also a Supplement to this work (1850-52), but the discoveries of more recent years are in the later volumes. He wrote the part relative to Organic Chemistry in the new ed. of Geiger's Handbuch der Pharmacie (Heidelb. 1839), published afterward as Die Organische Chemie in ihrer Anwendung auf Physiologie und Pathologie, translated into French and English (1842). Organic Chemistry in its Application to Agriculture (Brunsw. 1840; English translation by Dr. Lyon Playfair 1840; French translation by Gerhardt 1840), and Chemical Letters (Paris 1852), all of which have gone through numerous editions, and have been translated into different languages, are among the most valuable contributions to chemical literature in our times. In private life, L. was courteous and hospitable; and though the recipient of high honors from many lands, retained his natural modest simplicity to the last.

LIECHTENSTEIN-LIÉGE.

LIECHTENSTEIN, lēċh'tėn-stin: sovereign and independent principality, smallest in the former German Confederation; 60 sq. m. It is a mountainous district, on the Upper Rhine, between Switzerland and the Tyrol, the latter bounding it n.e., while the Rhine forms its w., and the Canton of the Grisons its s. boundary. It is divided into the districts of Vadutz and Schellenberg, and the principal town is Liechtenstein (pop. 1,000), formerly known as the Vadutz. The products are wheat, flax, and good wines and fruit. Considerable numbers of cattle are raised. L., with several other small states, formed the 15th member of the German Confederation, but in the *Plenum*, or full Council of the Diet, it had a separate vote. It furnished a contingent of 70 men to the federal army. The Prince of L., whose family is one of the most ancient and illustrious of central Europe, possesses extensive mediatized principalities in Austria, Prussia, and Saxony, which together extend over nearly 2,200 sq. m., with pop. more than 600,000, and yield their proprietor an annual revenue of 1,400,000 The government of L. is administered by the florins. aid of a chamber of representatives, who meet annually to hold a diet, but whose acts are under the control of a Council of State, which has its seat at Vienna, where the prince usually resides. The people are mostly of old German stock, and Rom. Cath. in religion. The revenue of L. is 50,000 to 60,000 florins. Now, it is not formally united with the German Empire, but joins in the Customs-union of Austria; and it has no army. Pop. (1880) 9,124; (1890) 9,434; (1901) 9,477.

LIEF, a. lef [AS. leofa; Dut. lief; Icel. ljufr, dear, pleasing]: in OE., dear; beloved: AD. willingly. As LIEF, as soon; as readily.

LIEGE, a. lēj [mid. L. ligius, or OF. lige, liege, loyal, a term of the feudal law signifying the absolute nature of the duty of a tenant to his lord—from mid. L. litus, a man between a serf and a freeman, and bound to the soil]: obliged to be faithful and loyal to a superior, as a vassal to his lord: N. a vassal; and by an old but false application of the word, a superior or sovereign. Liegelord, the lord of liegemen; the lord entitled to claim fidelity and certain duties from his tenants. Liegeman, a vassal; a subject. Note.—Skeat is of opinion that Liege is derived from OF. lige—from O.H.G. ledec or lidic, free, unfettered; that liege lord was the lord of a free band; that the lord's lieges, though serving under him, were privileged men, their name being due to their 'freedom,' not to their 'service': see also Littré.

LIÉGE, lē-āzh' [so called in French, but by the Germans Lüttich, and by the Flemings Luyk]: most easterly province of Belgium; 1,106 sq. m. The s. part of the province is hilly, rocky, heathy, and much covered with wood, in some places yielding great quantities of coal and iron; but the part called the Herveland (n. of the

LIEGE-LIEGNITZ.

Weeze) is extraordinarily fertile and well cultivated, and has excellent pasturage for cattle. The valley of the Weeze is very beautiful, with endless diversity of scenery. The railway from Aix-la-Chapelle to L., through this valley, met immense difficulties in the nature of the ground, and is regarded as a chef-d'œuvre of the kind: nearly a sixth of the whole road had to be artificially constructed. The inhabitants of L. are Walloons: pop. nearly a sixth of the whole road had to be artificially constructed. The inhabs. of L. are Walloons: pop. (1881) 672,240; (1888) 738,694; (1890) 756,734; (1900) 826,175.

LIEGE': city of Belgium, cap. of the province of L.; on the Meuse, immediately below its confluence with the Ourthe, in a magnificent plain. A hill rises on each side of the city, and one of these hills is occupied by the citadel. The river, which divides L. into two parts, the old and the new town, is crossed by 17 bridges. is said to be the most picturesque city in Belgium. Many of the public buildings are fine, especially the churches, of which the principal are the Church of St. Jacques (founded 1016, finished 1538), the cathedral (finished 1557), the Church of St. Martin's, the Church of the Holy Cross (consecrated 979), and St. Barthelemy (which has 5 naves). The Palace of Justice, with its paintings and 60 rooms—formerly the residence of the episcopal princes of L.—and the University, noted for its mining-school, also are very notable. The general interior of the city, however, is not pleasant; everything is blackened by the smoke of the coal-pits, which have been worked for 300 years; the streets are narrow, the houses high, badly aired, and uncleanly. The manufacture of arms is the great staple of industry. Everywhere the hammer is heard; countless forges flash out their sudden sparks, and whole streets are red with the reflection of fires. All kinds of steam-machinery, locomotives, steamboats, etc., are made here for Germany. In the immediate neighborhood are important zincfoundries. L. is connected by railways with Brussels, Antwerp, Namur, etc. Pop. (1890) 147,660; (1900) 173,-708. L. became the seat of a bishop in the 8th c., and continued so till 1794; and its bishops were reckoned among the princes of the German empire; but as it early acquired importance, its inhabitants maintained a struggle for their own independence against their bishops, in which frequent appeals were made to arms. During the wars of Louis XIV., it was several times taken and retaken.

LIEGE POUSTIE, lej pows'ti: see DEATH-BED

LIEGER, or Leiger, n. lē'jėr: in OE., a resident ambas sador: see Ledger.

LIEGNITZ, leg'nits: town of Prussia, govt. of Silesia, at the confluence of the Schwarzwasser and the Katzbach. 40 m. w.n.w. of Breslau. It has numerous educational and benevolent institutions, art-collections, and industrial museums. Cloth, leather, and tobacco are largely tured, and vegetables are cutensively cultivated

LIEN-LIERRE.

in the gardens of the suburbs. This town was, 1164-1675, the residence of the Dukes of Liegnitz. Here, 1813, Blücher defeated the French. Pop. (1885) 43,347, of whom about one-fifth are Rom. Caths.; (1900) 54,882.

LIEN, v. līn: old pp. of LIE, to rest on: see LIE 2.

LIEN, n. len or li'en [F. lien, a band, a ligament—from L. ligāmen, a band, a tie—from ligārē, to tie]: obligation. tie, or claim annexed to, or attaching upon, any property, without satisfying which such property cannot be demanded by its owner; a security over goods or land for a debt. A particular L is one in which the goods claimed are actually in the creditor's possession and are in some manner concerned with the debt incurred: such is the L. of the workman on the articles delivered to him to be operated upon, for his pay; of the carrier on the goods conveyed by him, for the fare; of the farrier on the horse which he has cured, for his fee; likewise with artificers generally. A general L. is a right of detainer over property for a debt not concerned with the article detained: it requires a special contract either in terms or plainly inferable from usage of trade. Parting with the article (under particular L.) or agreement to give up the right even while detaining the property, is a waiver of the lien. Generally, an L. gives only a right of detention, not the power of sale; but in some special cases statutes have added the power of sale; e.g., L. of an innkeeper over chattels in his charge. A special development in several states is the 'mechanics' L.' created by statute, giving laborers on a building a L. over it for their wages unpaid: on proper notice they can get their wages out of the property even though it must be sold for that purpose. This, and similar preferential charges in favor of unpaid venders, are sometimes called equitable liens.

LIENAL, a. $l\bar{\imath}$ - $\bar{e}'n\bar{a}l$ [L. $l\bar{\imath}en$ or $l\bar{\imath}enem$, the milt or spleen]: of or pertaining to the spleen. Lienculus, n. $l\bar{\imath}$ - $\bar{e}ng'k\bar{u}$ - $l\bar{u}s$ [L. dim. of lien]: a small or supplementary spleen.

LIENTERY, n. $l\bar{\imath}'en-ter-\bar{\imath}$ [Gr. leios, smooth, soft; en-teron, an intestine]: a disease in which the food is discharged undigested from the bowels. LIENTERIC, a. $l\bar{\imath}'en-ter'\bar{\imath}k$, having the nature or displaying the symptoms of lientery.

LIERNE, n. *lī'ėrn* [etym. doubtful; perhaps from F. *lier*, to bind]: in *arch*., a branch rib introduced between the principal ribs of a groined arch, to form an ornamental pattern.

LIERRE, or Lier, $l\bar{e}$ - $\bar{a}r'$: town of Belgium, province of Antwerp, 10 m. s.e. of the city of Antwerp, at the confluence of the Great and Little Nethe. It dates from the 9th c., and has a notable church (St. Gommarius) begun 1425. L. has noted breweries; extensive manufactures of linen, silk, lace, and musical instruments are carried on, and there are several sugar-refineries and oil-mills. Pop. (1885) 18,156; (1890) 20,133.

LIEU-LIEUTENANT.

LIEU, n. lū [F. lieu, place—from L. locus, a place]: place; room; stead; used only in the phrase, in lieu of.

LIEUTENANT, n. lū-těn'ant or lef- [F. lieutenant-from lieu, a place; tenant, a supporter—from tenir, to hold: L. locum-tenen'tem, one who holds another's place: a deputy: term applied to a variety of offices of a representative kind. Thus, in military matters, a lieutenant-general personates with each division of an army the general-inchief. A lieutenant-colonel commands a battalion for a colonel, in the latter's absence. But the title lieutenant, without qualification, denotes the second officer and deputy, or locum-tenens, of the captain in each company of eavalry or infantry.—Captain-lieutenant, an obsolete rank, was the subaltern who commanded the 'colonel's company' in each regiment.—A lieutenant in the U.S. army and marine service holds rank next below captain: he ranks with a master in the navy. A secondlieutenant is the lowest commissioned officer of a com-

pany, and corresponds to an Ensign (q.v.).

In the British and in the U.S. navy, lieuteuant is a misnomer in the case of the officer bearing that title. His functions in all respects correspond to those of a capt. in the army, with whom he ranks, and with whom he also nearly matches in regard to pay. As leaders in all minor enterprises, such as boat expeditions, cutting out, etc., lieutenants in war-time earry off most of the laurels awarded to actions of singular personal daring. Lieu-TEN'ANCY, n. -ten'an-si, the office or commission of a lieutenant: the body of lieutenants. Lieuten'antship, n. the office of a lieutenant. LIEUTENANT-COLONEL, in the U.S. army, officer next in rank above a major and below a eolonel, and corresponding to a commander in the navy. In the British army, nominally the second officer in a regt. but virtually a lieut.col. commands every battalion of infantry and regt. of cavalry, the post of eolonel being merely an honorable sinecure, with usually £1,000 a year attached, awarded to a general The lieut.col. is responsible for the discipline of his battalion, the comfort of his men, and ultimately for every detail connected with their organization. aided by the major and adjutant. In the artillery and engineers, where the rank of eolonel is a substantive rank, with tangible regimental duties, the functions of lieut.col. are more limited, one having charge of every two batteries of artillery, or two companies of engineers. LIEUTENANT-GENERAL, in the U. S. army, officer in rank next above a major-general, and next below the general, the last named being, under the president, com-mander-in-chief. The rank of lieut.gen. was first authorized by congress 1798 and conferred on Gen. Washington: it was not again conferred till 1855-by brevet on Gen. Winfield Scott. It was conferred on Gen. Ulysses S. Grant 1864. When the highest grade, general, was created for Gen. Grant, Gen. Wm. T. Sherman became lieut.gen.; and when he succeeded to the rank of

LIEUTENANT.

general, Gen. Philip H. Sheridan became lieut.gen. Finally, 1888, May, congress passed a bill to discontinue the grade of lieut.gen. and to merge it into the highest grade of 'General of the Army of the United States,' with the provision that that grade should continue only during the lifetime of Gen. Sheridan. With his death, 1888, the grade expired. In 1895 congress revived the grade of lieut.-gen. for John M. Schofield, senior maj.-gen. in command of the army since the death of Gen. Sheridan; and again in 1901, when Nelson A. Miles was appointed to it.

LIEUTEN'ANT (LORD-), OF A COUNTY: in England, permanent provincial governor appointed by the sovereign by patent under the great seal. The office in England arose from the occasional commissions of array issued by the crown in times of danger or disturbance, requiring experienced persons to muster the inhabitants of the counties to which the commissioners were sent, The right of the crown and set them in military order. to issue such commissions was denied by the Long Parlament, this question proving the immediate eause of the breach between Charles I. and his subjects. Their legality was established at the Restoration by a declaratory act. At present the main function of the lord-lieutenant is to recommend qualified persons for the office of justice of peace, his militia jurisdiction having been taken from him, and revested in the crown, 1871. The history of the office seems to have been similar in Seotland. Act 1438, c. 3, the 'lieutenant' is commanded to 'raise the county' whenever it may be necessary to bring the rebellious and unruly possessors of castles and fortalices into subjection: and though his powers were executive rather than judicial, he seems sometimes to have exercised the functions of the sheriff, or overruled his decisions. The lord-lieutenant, who is usually a peer, or other large landowner, is usually also the Custos Rotulorum (q.v.). He is at the head of the magistracy, and is the chief executive authority, forming the settled channel of communication between the government and tho magistracy, and considered as responsible in eases of emergency for the preservation of public tranquillity. Under him, and of his appointing, are permanent deputylieutenants.

LIEUTEN'ANT (LORD-), OF IRELAND: viceroy or deputy of the sovereign to whom the govt. of Ireland is committed. The office has existed from a remote period, under different designations. The powers were in early times very extensive, almost regal. For the last half century following the revolution, the L.-L. resided little in Ireland, visiting it only once in two years, to hold the session of parliament. Some lords-lieutenant never went to Ireland at all, and occasionally, instead of a viceroy, lords-justices (see Justices, Lords) were appointed.

The L.-L. has the assistance of a privy-council of 58 members, appointed by the sovereign, and of officers of

LIEUTENANT.

state. He is commissioned to keep the peace, and the laws and customs of Ireland, and to see that justice is impartially administered. He has the control of the police, and may issue orders to the general commanding the troops for the support of the civil authority, the protection of the public, the defense of the kingdom, and the suppression of insurrection. He may confer knight-hood, and, previous to disestablishment of the church, had the disposal of church preferment, as well as all the other patronage of the country. The granting of money, and lands, and pensions, of all titles of honor except simple knighthood, the appointment of privy-councilors, judges, law officers, and governors of forts, and the appointment to military commissions, are reserved to the sovereign, acting, however, on the lord-lieutenant's advice and recommendation. No complaint of injustice or oppression in Ireland will be entertained by the sovereign until first made to the L.-L., who is in no case required to execute the royal instructions in a matter of which he may disapprove until he can communicate with the sovereign and receive further orders. Yet, notwithstanding the dignity and responsibility of his office, the L.-L. acts in every matter of importance under the direct control of the cabinet of Great Britain. The views and opinions of the cabinet on all the more important questions connected with his government are communicated to him by the home sec., who is held responsible for the government of Ireland, and with whom it is the duty of the L.-L. to be in close correspondence; on matters of revenue, he must be in constant communication with the treasury. His salary is £20,000, with a residence in Dublin Castle, as well as one in Phonix Park. His tenure of office depends on that of the ministry of which he is a member. A Rom. Catholic is ineligible for the lieutenancy of Ireland.

LIEVE, ad. lēv, also Lever, ad. compar. lēv'er: in OE. for Lief, soon as; willingly: see Lief.

LIEVRITE, n. lēv'rīt [after the discoverer, Le Lievre]: a brownish-black mineral, a silicate of iron and lime, occurring in long, vertically striated, prismatic crystals.

LIF, or LIEF, n. lif, or Loof, n. lôf [unaseertained]: the fibre by which the petioles of the date-palm are bound together, from which all sorts of cordage are made.

LIFE, n. līf, LIVES, n. plu. līvz [Icel. lif; Dan. liv, life: Goth. liban, to live: Ger. leben, to live; leib, body: Dut. lif, body, life]: the vital force or state of an organized body; manner of living; human affairs; course of things; conduct; period of existence; a person, as a lease is held for three lives; time between birth and death; spirit or animation; living form, as opposed to a copy; general state of man in his ways or social habits; a narrative or history of a person; animated existence; eternal happiness in heaven; position or rank in society. LIFELIKE, a. like a living person. Lifeless, a. līf'les, devoid of vital force; without activity or vigor; spiritless; dead. Life Lessly, ad. -1. Life Lessness, n. -nes, destitution of life or vigor. To the life, with exact resemblance. LIFE LONG, a. lasting or continuing through life—spelled LIVELONG in Shak. LIFE-ANNUITY, a sum of money paid yearly to a person during life (see Annuity). Life-ASSURANCE, a certain amount of money payable after death to representatives, secured by a yearly premium paid during the life of the assured (see Insurance). LIFE-BELT, a belt filled with eark or capable of being inflated with air to keep a person from sinking in the water. Life-blood, vital blood; anything absolutely essential. LIFE-BOAT (see below). LIFE-BUOY, an article for keeping a person floating in water (see LIFE-PRESERVER: LIFE-RAFT: LIFE-MORTAR AND ROCKET). LIFE-ESTATE, in English law, estate or interest in real property for a life. Life-estates in lands are classed among Freeholds (q.v.). Life-estates are created by deed, but there are certain estates created by law, as Courtesy (q.v.), Dower (q.v.), tenancy in tail after possibility of issue extinet. As to Scotland, see LIFERENT. LIFE-GIVING, having the power to give life. LIFE-GUARD, company of soldiers that attend a prince or a person of eminence for honor or safety (see Life-guards). Life Insurance (see In-SURANCE). LIFE-INTEREST, an interest during life in an estate or money. Life-lines, ropes carried along yards, booms, etc., or any part of a vessel for the men to hold on by. Life-preserver (see below): also short flexible weapon, loaded at both ends with lead, used for defense or attack. LIFERENT, in Scotch law, right to use

a heritable estate for life: see LIFE ESTATE.—SYN. of 'lifeless': inanimate; soulless; torpid; inactive; dull; heavy; inert; unanimated; pointless; frigid; tasteless; flat; vapid.

LIFE: term which, in philosophy, still awaits a strict and adequate definition. It is difficult to find for it a definition that does not include more than is necessary, or exclude something that should be taken in. rand's definition of life, that it is 'a collection of phenomena which succeed each other during a limited time in an organized body,' is applicable equally to the decay which goes on after death. According to De Blainville, 'life is the twofold internal movement of composition and decomposition, at once general and continuous. Herbert Spencer in Principles of Biology well observes, this conception is in some respects too narrow, and in other respects too wide. Thus, it excludes those nervous and muscular functions which form the most conspicuous and distinctive classes of vital phenomena. while it applies equally to the processes going on in a living body and in a galvanic battery. Spencer (1852) proposed to define life as 'the co-ordination of actions,' but, as he observes, 'like the others, this definition includes too much, for it may be said of the solar system. with its regularly recurring movements and its self-balancing perturbations, that it also exhibits co-ordination of actions.' His present and amended conception of life is: 'The definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external co-existences and sequences.' One of the latest definitions of life is that suggested by George H. Lewes: 'Life is a series of definite and successive changes, both of structure and composition, which take place within an individual without destroying its identity.' This is perhaps as good a definition as has yet been given; but neither it, nor the one last quoted (from Spencer), is of the least value as real definition, since neither gives any clearer idea of what life is than is given by the word life itself. Indeed, such definitions darken their subject: one makes life 'a series,' the other a 'combination;' whereas we know it to be a force, and a force that uses other forces for production of a series of definite and successive changes. It is 'the force of forces'—a mystery.

Life, entering into the physical sphere, is developed as a force active on and through matter. The following is, in part, Prof. Huxley's statement of the distinctive properties of living matter: '1. Its chemical composition—containing, as it invariably does, one or more forms of a complex compound of carbon, hydrogen, oxygen, and nitrogen, the so-called protein (which has never yet been obtained, except as a product of living bodies) united with a large proportion of water, and forming the chief constituent of a substance which, in its primary unmodified state, is known as protoplasm. 2. Its universal dis-

integration and waste by oxidation; and its concomitant reintegration by the intus-susception of new matter. A process of waste resulting from the decomposition of the molecules of the protoplasm, in virtue of which they break up into more highly oxidated products, which cease to form any part of the living body, is a constant con-comitant of life. There is reason to believe that carbonic acid is always one of these waste products. 3. Its tendency to undergo cyclical changes. In the ordinary course of nature, all living matter proceeds from preexisting living matter, a portion of the latter being detached and acquiring an independent existence. new form takes on the characters of that from which it arose; exhibits the same power of propagating itself by means of an offshoot; and, sooner or later, like its predecessor, ceases to live, and is resolved into more highly oxidated compounds of its elements.'—Encyc. Brit. 9th ed.—See BIOLOGY.

LIFE, MEAN DURATION OF: average length of life of a given number of persons of the same age. The Northampton Table of Mortality shows that, of 3,635 persons aged 40 years, 3,559 reach 41, 3,482 reach 42, and so on; the whole number failing at 96 years. The average age then attained by the 3,635 persons being ascertained on these data, would be the mean duration of life after the age of 40 has been reached. Suppose, then, that α be the given number alive at a given age by a given mortality table, and b the number alive at the end of the first year, c the number alive at the end of the second, and so on; then there die at the end of the first year, a-b; and assuming that those who have died have, on an average, lived half a year, the aggregate length of life enjoyed by those who have died during the first year will be $\frac{1}{2}(a-b)$ years; then b being still alive, the a persons have lived, at the end of the first year, $\frac{1}{2}(a-b) + b$ $=\frac{1}{2}(a+b)$ years. In the second year, the a persons live $\frac{1}{2}(b+c)$; in the third, the c persons live $\frac{1}{2}(c+d)$ years; and so on. Summing these, and dividing by the original number of lives, so as to ascertain the average, gives

 $\frac{1}{2} + \frac{b+c+d}{a}$; hence the rule: Add the numbers alive

at each age above that given, divide by the number alive at the given age, and add half a year. The mean duration of life at a given age is often called the 'expectation of life'; but this is clearly a wrong term to use. Of 1,000 lives at 20 years, suppose 500 to reach 45; then a man aged 20 has an equal chance of reaching 45; and 25 years would be his expectation of life. But it clearly does not follow that taking the 500 who have not reached 25, along with the 500 who have survived it, we should find, on extinction of the whole number, that the mean duration was 25 years. Returns of the U. S. census of 1900 showed such a marked lowering of the death rate that it was believed the life insurance companies would find it necessary to reconstruct their mortality tables.

LIFE-BOAT.

LIFE-BOAT: boat adapted to 'live' in a stormy sea, with a view to the saving of life from shipwreck. Its qualities must be buoyancy, to avoid foundering when a sea is shipped; strength, to escape destruction from the violence of waves, from a rocky beach, or from collision with the wreck; facility in turning; and a power of

righting when capsized. A melancholy wreck at Tynemouth, England, 1789, Sep., suggested to the subscribers to the South Shields News-room, who had witnessed the destruction of the crew one by one, that some special construction of boat might be devised for saving life from stranded vessels. They immediately offered a premium for the best form of L.-B.; and one was built by Henry Greathead. It was of great strength, having the form of the quarter of a spheroid, with sides protected and rendered buoyant within an I without by superposition of layers of cork. So useful was it in the first 21 years after its introduction, that 300 lives were saved through its instrumentality in the mouth of the Tyne alone; and its builder received the gold medals of the Soc. of Arts and Royal Humane Soc., £1,200 from parliament 1802, and a purse of 100 guineas from Lloyd's, the members of which society also voted £2,000 to encourage the building of lifeboats on different parts of the coast. Although various other life-boats were invented, Greathead's remained the general favorite until about 1851, and many of his construction are still seen on different points of the coast. They failed, however, occasionally; and several sad mishaps befell the crews of life-boats, especially in the case of one at South Shields, in which 20 pilots perished. Upon this the Duke of Northumberland offered a prize for an improved construction, and numerous designs were submitted, a hundred of the best of which were exhibited 1851. James Beeching of Yarmouth obtained the award; but his bout was not entirely satisfactory, and R. Peake, of Her Majesty's Dockyard at Woolwich, was intrusted with the task of producing a life-boat which should combine the best qualities of the different inventions. His efforts were very successful, and the National Life-boat Institution adopted his model as the standard for the boats they should thereafter establish on the coasts.

Sections of Mr. Peake's life-boat are shown below, one lengthwise through the keel, the other crosswise in the middle. A, A, are the thwarts on which the rowers sit; BB, a water-tight deck, raised sufficiently above the bottom of the boat to be above the level of the sea when the boat is loaded; C, C, are air-tight chambers running along each side, and occupying 3 to 4 ft. at each end; the buoyaney afforded by these more than suffices to sustain the boat when fully laden, even if filled with water. To diminish the liability to capsize in a heavy sea, the life-boat has great beam (breadth) in proportion to her length, viz., 8 ft. beam to 30 length. In addition,

LIFE-BOAT.

the bottom is almost flat. As in her build it has been found convenient to dispense with cross-pieces, some means are required to preserve the rigidity of the whole structure amid the buffetings of a tempest. To achieve this, and also to serve the purposes of light ballast, Mr. Peake fills the space between the boat's bottom and the water-tight deck (BB) with blocks, tightly wedged to-

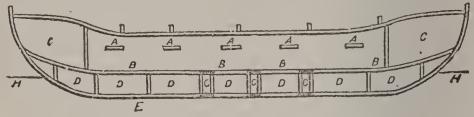


Fig.1.—Section lengthwise.

gether, of cork and light hard wood, D, D. These would form a false bottom, were a rent made in the outer covering, and, by their comparative weight, counteract in some degree the top-heaviness induced by the air-vessels, which are entirely above the waterline (H). This arrangement would be insufficient to maintain the equilibrium of the boat, however, and especially under sail, so Mr. Peake has added a heavy iron keel (E) of 4 to 8 cwt., which effectually keeps the boat straight. Some builders object to this iron ballast: the Liverpool and Norfolk boats take out their plugs, and preferably admit water until steadiness is secured; but Mr. Peake has an additional object in view—that of causing the boat to immediately right itself if turned upside down, as the best boats sometimes will be in heavy gales. It will be noticed that the ends of the boat rise above the centre $1\frac{1}{2}$ to 2 ft. This, for one thing, facilitates turning, as the pivot on which her weight

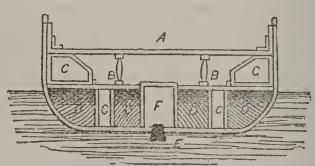


Fig. 2.—Section crosswise.

rests is shortened; for another, if she capsizes and is thrown bottom up, these raised caissons are sufficient to sustain her by their buoyancy. So long, then, as she floats precisely in an inverted state, she will be steady; but the slightest motion to either side—which, of course, in practice ensues instantly—throws the heavy keel off the perpendicular in which its centre of gravity was exactly over the line between bow and stern, and the boat must immediately right itself. This process is shown in fig. 3, where it will be perceived that the overturned boat must forthwith right itself in the direction indi-

LIFE-BOAT.

cated by the arrow, on account of the heavy top-weight at E. F is a covered trough, to contain the tackle, sails, etc., when not in use; in service, it is also useful

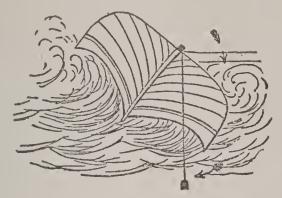


Fig. 3.

to receive any water that may penetrate among the cork and wooden chocks beneath the water-tight deck: this leakage is at times considerable when the outer skin of the boat has sustained damage. The trough may be fitted with a small hand-pump, to enable one of the

sitters to clear it out when necessary.

Perhaps the most beautiful contrivance in the L.-B. is that for discharging the water which she ships. This consists of six relieving tubes, G, each six inches in diameter, passing through the deck, B, the ballast, D, and the bottom. The tubes, which are near the centre of the boat, three on each side, have at the bottom a valve opening outward. As the deck, B, is always above the water-level, any water in the boat necessarily flows out through these tubes, so that if a wave bursts over her, and completely fills the boat, the relieving tubes free her, and she is empty again in a few minutes. greater the height of water within, the faster will it run out. The advantages of the L.-B. may be thus summed up. summed up. The air-chambers and the light ballast render sinking impossible; the keel nearly prevents capsizing, and rectifies it, if it does happen; while the relieving tubes effectually clear off any water that finds its way within. With such precautions, the safety of the crew appears almost assured, and, in fact, loss of life in a L.-B. is a very rare occurrence.

The boat is kept on a truck—of considerable strength, as the life-boat weighs two tons—close to the beach, and is drawn to the water's edge when required; the crew are trained to their work, and are among the hardiest of seamen. Ordinary life-boats are rowed by 8 or 12 oars (of the best fir) double banked; but for small stations, where it would be difficult to collect so many men at short notice, smaller boats are made, rowing 6 oars

single banked.

The Royal National Life-boat Institution, after an unrecognized existence for several years, was formally incorporated 1824. Its objects are, to provide and maintain in efficient working order life-boats of the most

LIFE GUARDS-LIFE-MORTAR.

perfect description on all parts of the coast; to provide, through the instrumentality of local committees, for their proper management, and the occasional exercise of their crews; to bestow pecuniary rewards on all who risk their lives in saving, or attempting to save, life on the coast, whether by its own or other boats, and honorary medals, to all who show unwonted heroism in the noble work. It is supported entirely by voluntary con-It saves about 900 lives annually. tributions. it expended £36,136 on life-boat establishments, pecuniary rewards (£3,289), etc. The society has now a fleet of 256 life-boats stationed all round the British shores. The coxswains of the boats are paid at the rate of about £8 a year. The members of the crew are paid for each service performed. From its formation up till the end of 1881, the soc. was instrumental in saving 29,182 lives, and gave rewards to the extent of £50,000, besides almost 100 gold and 900 silver medals.

The size of a common L.-B. renders it inconvenient for stowage on shipboard. To obviate this, the Rev. E. L. Berthon, of Fareham, invented a collapsing boat, which is readily expanded, has great strength, and at the same time occupies comparatively little space when out of use. Its sides are connected by various hinges. This kind of boat is largely carried by ocean steamships.—For the L.-B. in the United States, see Life-

SAVING SERVICE.

LIFE GUARDS, in England: two senior regiments of the mounted portion of the body-guard of the British sovereign and garrison of London. They took their origin in two troops of horse-grenadiers raised respectively 1693 and 1702; reformed as regiments of Life Guards 1783. Although usually employed about the court and metropolis, the Life Guards distinguished themselves in the Peninsula and at Waterloo. The men all are six ft. high and upward, armed with sword and carbine, wear knee-boots, leather breeches, red coats, and steel helmets: they wear also steel cuirasses, of doubtful utility. With this unwieldy armor, they require powerful horses, which are uniformly black. The two regiments comprise 868 men, with 550 horses.

LIFE-MORTAR AND ROCKET: apparatus for rescuing persons from a wrecked ship by casting ropes out to them, when a life-boat is not at hand, or when a raging sea and a shoal coast render its use impracticable. A small rope may draw a thicker, and that a hawser, and a hawser may sustain a slinging apparatus for bringing the



Fig. 1.—Captain Ward's Heaving-stick.

crew on shore. For short distances, Capt. Ward's heaving-stick (fig. 1) has been found useful: it is a piece of

LIFE-MORTAR.

stout cane two ft. long, loaded at one end with 2 lbs. of lead, and at the other attached to a thin line. It is whirled round vertically two or three times, and then let go; but it cannot be relied on for more than 50 yards. Kites of various kinds have been employed, but are not certain in action. The firing by gunpowder of some kind of missile, with a line or rope attached to it, is the method most successful. In 1791, Sergeant Bell, of the Royal Artillery, England, devised a mode of firing a shot and line from a distressed ship to the shore. It was afterward found to be more practically useful to fire from the shore to the ship. In 1807, Capt. Manby invented his life-mortar (see Manby, George William). His mortar was an ordinary 51-inch 24-pounder cohorn, fixed at a certain angle in a thick block of wood. The missile discharged from it was a shot with curved barbs (fig. 2), something like the flukes of an anchor, to catch



hold of the rigging or bulwarks of a ship. How to fasten the shot to the rope was at first a difficulty: chains were not found to answer; but at length

Fig. 2.—Captain Manby's Life-shot. strips of raw hide were found suitable. To assist in descrying the exact position of a distressed ship on a dark night, in order to aim the mortar-rope correctly, Manby used a chemical composition as a firework, which would shine out in brilliant stars when it had risen to a certain height. A third contrivance of his, for replacing the shot by a shell filled with combustibles, in order to produce a light which would render the rope visible to the crew, was not so successful.

Many variations have been made in the line-throwing apparatus. Col. Boxer has recently substituted a bolt (fig. 3), for the shot, with four holes at the end; fuses thrust into these holes shed a light which marks the passage of the bolt through the air. Trengrove's rocket-

passage of the bolt through the apparatus, invented 1821, consisted of an ordinary 8-oz. skyrocket (see Rocket). Certain practical difficulties, however, affected it and limited its use. In 1832, Dennett's apparatus was invented. It nearly re-



Fig. 3.—Colonel Boxer's Life-bolt.

sembled the old sky-rocket, but with an iron case instead of a paper one, and a pole eight ft. long instead of a mere stick: it weighed 23 lbs., was propelled by 9 lbs. of composition, and had a range of 250 yards. A ship's crew having been saved by the aid of this rocket at Bembridge in the Isle of Wight, the Board of Customs caused many of the coastguard stations to be supplied with the apparatus 1834. Carte's apparatus, 1842, depended on the use of a Congreve rocket (see ROCKET) instead of an ordinary sky-rocket. It does not appear that this ap-

LIFE-MORTAR.

paratus was ever adopted by the authorities. Dennett next sought to improve the power of his apparatus, by placing two rockets side by side, attached to the same stick; and it certainly did increase the range to 400 yards; but as the simultaneous and equal action of the rockets could not be always insured, the scheme was abandoned. Col. Delvigne, of the French army, invented



Fig. 4.—Colonel Delvigne's Life-arrow.

a life-arrow (fig. 4), to be fired from an ordinary musket. It is a stick of mahogany, shaped something like a billiard cue; the thicker end presses on the powder; while the thinner end, loaded with lead, is fitted with loops of string; a line or thin rope is attached to the loops, and the thin end of the stick projects beyond the barrel. The jerk, when the arrow or stick is fired, causes the loops to run down the stick to the thick end: this action has an effect like that of a spring, preventing the stick from darting forward so suddenly as to snap the line. The apparatus will send an arrow of 18 oz. to a distance of 80 yards, with a mackerel line attached. Another French contrivance, Tremblay's rocket with a barbed head, was soon adopted for the emperor's yacht; but as it is to be fired from the ship to the shore, it partakes of the same defects as Sergeant Bell's original invention.

The most effective apparatus yet invented is Col. Boxer's. Finding that Dennett's parallel rockets on one stick do not work well, he succeeded after many trials in a mode of placing two rockets in one tube, one behind



Fig. 5.—Colonel Boxer's Double Rocket (section).

the other (fig. 5). The head is of hard wood; there is a wrought-iron case, with a partition between the two rockets. When fired, the foremost rocket carries the case and the attached line to its maximum distance, and the rearmost rocket then gives these a further impetus. The effect is found to be greater than if the two rockets were placed side by side, and also greater than if the quantity of composition for the two rockets were made up into one of larger size. The rocket is fired from a triangular stand, and is lighted by fuse, port-fire, or percussion-tube; the elevation is determined by a quadrant or some similar instrument.

The lines used with these several projectiles have varied greatly; but the best is found to be Italian hemp, spun loosely. It is very elastic, and when thick enough for the purpose, 500 yards weigh 46 lbs. In Boxer's

LIFE-MORTAR.

rocket, the line passes through the tail of the stick, then through the head, where it is tied in a knot, with indiarubber washers or buffers to lessen the jerk. The line is carefully wound on a reel, or coiled in a tub, or faked in a box provided with pins ranged round the interior—to enable the line to run out quickly without kinking or entangling. Dennett's faking-box for this purpose is the one now generally adopted.

Life belts, jackets, and buoys of numerous kinds are used, made of cork, inflated india-rubber, etc.; but one apparatus now employed in conjunction with the liferockets is known by the curious name of petticoat-breeches, or more simply, sling life-buoy. It is not

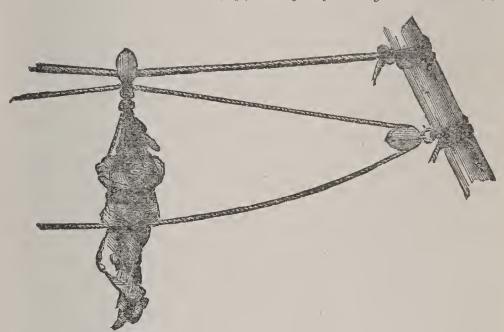


Fig. 6.-Lieutenant Kisbee's Sling Life-Buoy, or Petticoat-breeches.

strictly either a belt or a buoy, but a garment in which a man may be slung clear out of the water. When a rocket has been fired and a line has reached the distressed ship, signals are exchanged between the ship and the shore: a thicker rope is pulled over to the ship by means of the line, and a hawser by means of the rope. When all is stretched taut, by fastening to the masts, etc., articles can be slung on the hawser and drawn to and fro. The petticoat-breeches invented by Lieut. Kisbee, consists of a circular cork life-buoy forming the top ring of a pair of canvas breeches; one of these is hauled over from the shore to the ship; a man gets into it, his legs protruding below the breeches, and his arm-pits resting on the buoy; and he is hauled ashore by block-tackle. The crew of a wrecked ship can thus one by one be rescued. To prevent losing the hawser and other apparatus, when the last man has left the ship, an apparatus called a hawser-cutter is used, working in the ship, but worked from the shore.—For other apparatus, see Life Preserver. Life-Rocket Department: Life-Saving Service.

LIFE-PRESERVER-LIFE-RAFT.

LIFE'-PRESERVER: invention for the preservation of life in cases of fire or shipwreck. For fire life-preservers, see Fire-escapes. The other class, to which the name Life-preserver is now nearly limited, includes the various contrivances for preserving the buoyancy of the human body, and for reaching the shore. Of these, the readiest and most effective are empty water-casks, well bunged-up, and with ropes attached to them to hold on by. It has been found that a 36-gallon cask so prepared can support 10 men conveniently, in moderately smooth water. Cook's and Rodger's patent life-rafts consist of square frames buoyed up by a cask at each corner. Among foreign nations, frames of bamboo, and inflated goat and seal skins, have been long employed as life-preservers; and in China, it is customary for those living on the banks of the canals to tie gourds to their children, to buoy them up in case of their falling into the water. Since the introduction of cork, jackets and belts of that material in immense variety have been patented. It has been calculated that one pound of cork is amply sufficient to support a man of ordinary size. A few years ago, on the invention of india-rubber cloth, inflated belts of this material were made, and found to be superior in buoyancy to the cork belt, besides, when emptied of air, being very portable. They are, however, much more liable to damage by being punctured or torn, or to decay by being put away while damp. Some of these defects are remedied by having the interior of the belt divided into several compartments; so that, when one is damaged, the remainder may still suffice. ous forms of inflated mattresses, pillows, etc., have been made on the same principle, and been found very effective; one shown in London at the Great Exhibition of 1851 having sustained 96 lbs, for five days without injury. A favorite life-buoy among sailors is composed of slices of cork neatly and compactly arranged, so as to form a buoyant zone of about 30 or 32 inches in diameter, 6 in width, and 4 in thickness. It consequently contains about 12 lbs. of cork, and is generally covered with painted canvas to add to its strength and protect it from the injurious action of the water. A bucy so constructed can sustain 6 persons, and it is generally furnished with a life-line (a cord running round the outside of the buoy and fastened to it at 4 points) to afford a more convenient hold. This life-preserver is found on very many vessels. A very frequent and probably the best form of individual life-preserver is a jacket of slices of cork inclosed in stout canvas, with cords for tying it around beneath the arms: this form is common on steamboats for inland navigation in the United States. See Life-MORTAR AND ROCKET: LIFE-RAFT.

LIFE'-RAFT: structure to serve the purpose of a life-boat when the life-boat is lacking. After the destruction of the *Northfleet*, 1873, off Dungeness, England, an exhibition was organized at the London Tavern, to which

LIFE-ROCKET DEPARTMENT.

the inventors of new life-saving appliances were invited to contribute. Among the apparatus were Hurst's liferaft, consisting of a double pontoon, bridged over; stowed outside a ship, and lowered by simply cutting the lashings; Christie's life-raft, a large rectangular framework, rendered buoyant by numerous air-tight spaces, some of which are available for stowing water and provisions; and Parratt's tubular life-reft, composed of cylindrical air-bags made of painted canvas. supporting a flooring of sail-cloth and netting, and rendered rigid by poles fixed in various directions. Many other novelties were displayed at the London Tavern, and also at a similar collection in the annual International Exhibition, in the forms of life-boats, rafts, garments, belts, buoys, etc.—In H. B. Mountain's L.-R. a waterproof canvas sack is fastened along its edges to the centres of two mattresses, providing an open space between them in which persons may be seated.

LIFE-ROCKET DEPARTMENT: branch of the Marine Dept. of the British Board of Trade which has the management of life-rockets, mortars, lines, buoys, and belts, on the coast of Britain. It divides with the National Life-boat Institution the labors connected with the prevention of shipwreck, and the rescue of shipwrecked persons. This has been the arrangement since 1855.

To work out properly the rocket and life-saving system, a topographical organization is in the first instance adopted. The coasts of the United Kingdom are classified into 59 coastguard divisions or wreck-registrars' districts; and the coastguard inspector of each division or district has control over all the rockets, mortars, buoys, belts, and lines kept at the various seaside stations in his district. There were (1874) about 300 such stations; some supplied with mortars, some with rockets as well as mortars, but the greater number with rockets only. Most of the mortars are Boxer's improvement on Minby's; and most of the rockets are Boxer's improvement on Dennett's. Boxer's rockets, found more effective than mortars, are made at the Royal Laboratory at Woolwich, and are supplied by the war department to the stations, on requisition from the Board of Trule; as are likewise mortar-shot and shells, fuses, portfires, signal-lights, gunpowder, etc. At each station is kept a cart, expressly made to contain all the requisites for the rocket-apparatus, ready packed. rockets are supplied with each apparatus; and a new supply is obtained before these are exhausted. Simpler apparatus, consisting of life-belts and life-lines, is kept at a much greater number of stations. The system is worked by the coastguard, the men being paid for periodical drilling, and for regular service. Special services are rewarded with gifts of money, medals, etc. See LIFE-MORTAR AND ROCKET: for the United States, see LIFE-SAVING SERVICE.

LIFE-SAVING SERVICE organization for the preservation of life from shipwrecked vessels, such as exists in Great Britain, France, Germany, Russia, the United States, and most civilized maritime countries. The first combined public organization of the kind was founded in England, 1824, as the Royal National Assoc. for Preservation of Life from Shipwreck. The subject had attracted attention there as early as 1785, when the first patent for a life-boat was granted. Now the service in Great Britain, with its more than 2,500 life-boats, saves an average of 452 lives every year. In the United States the origin of the present efficient service may be traced to 1786, when the Mass. Humane Soc. applied its machinery to life-saving. This organization for general benevolent purposes turned its attention to lessening the dangers of the coast of Mass., and the succor of ship-wrecked persons, by erecting huts for their shelter at exposed points, the first having been set up on Lovell's Island, near Boston. In 1807 the soc. established a lifeboat station at Cohasset, and, soon after, a number of others. Its work, which proved of incalculable benefit, was supported wholly by voluntary contributions until 1847, when the national govt. appropriated \$5,000 for furnishing the light-houses on the Atlantic coast with means for assisting shipwrecked mariners. This initiated the establishment of the present life-saving service of the United States. It was followed by an appropriation by congress of \$10,000 in 1855, the same amount in 1857, and \$15,000 in 1870. This society now has 78 stations in active service. Meantime similar associations were organized in other localities, though none of them proved very effective. The U.S. govt. took the first step toward a national service 1807 by its unsuccessful attempt to organize a coast survey; but it was not until 1832 that this department was finally established, followed by the organization of the lake survey. In 1848 an appropriation of \$10,000 was made, with which 8 buildings were erected on the coast of N. J., with surf boats, rockets, etc.; and soon afterward congress authorized the regular organization of the L.-S. S., and the establishment of 6 more stations on the N. J. coast, and 8 on that of Long Frequent appropriations thereafter led to the establishment of stations at various points along the Atlantic coast and the Gulf, fully equipped with life-The service was extended to the lakes, and its efficiency steadily increased. It was in 1871, however, on the re-organization of the entire service, that the present system was established. An appropriation of \$200,000 was made, with which the number of stations was increased and the apparatus improved. Other grants followed; the service was steadily extended and perfected. In 1874 the storm-signal department of the signal service was connected with the life-saving stations. In 1878 the telegraph and later the telephone were put to use in connection with the L.-S. S.; and congress organized it into a distinct dept., increased the salaries of station-masters and crews, and authorized compensation of the volunteer life-boat service on the lakes. The coast, sea and lake, is divided into 12 districts, each under a superintendent; with 272 stations, of which 195 are on the Atlantic, 60 on the lakes, 16 on the Pacific, and 1 station is at Louisville, Ky., on the falls of the Ohio river. The whole service is under one general superintendent. The stations on the L. I. and N. J. coasts are about 4 m. apart, and during winter the beach is patrolled night and day by surfmen, provided with signals, flags by day and lights by night, with which to summon help from the nearest station. From 1871 to 1902 there were 16,001 lives saved; 1,003 lives lost, and property to the value of \$158,370,977 was rescued. There were in all 13,379 disasters. See Shipwreck.

LIFT, v. lift [Icel. lypta; Dan. löfte, to lift—from loft, the air: AS. hliftan, to rise up, to raise or lift: Low Ger. luften, to raise into the lift or air—from Low Ger. lucht. the sky, the air—lit., to exalt into the air]: to raise from the ground; to elevate; to raise in dignity, intellect, or spirit; to strive to raise by strength: N. the act of lifting; assistance, as in lifting; that which is to be raised; anything that lifts; in hotels and high buildings, the frame or apparatus which raises up persons or things to the various floors. LIFT'ING, imp. LIFT'ED, pp. LIFT'ER, n. one who or that which lifts or raises. Lifts, n. plu. in nav., the ropes at the yard-arms used to make the yards hang higher or lower, or to maintain them in position, as required: the lift bears the designation of the yard to which it is attached; e.g., fore-lift, main-top-gallant-lift, etc. (see RIGGING). Also, machines for transferring goods or people from a lower to an upper part of a building, and the reverse; an elevator. Dead Lift, a heavy body lifted or raised at the utmost disadvantage. LIFTING-GEAR, the apparatus for lifting the safety-valves from within a boiler. To LIFT A DEBT, in Scot., to collect an account. To LIFT UP THE HAND, to confirm by oath, lifting up the hand forming its visible sign; to pray; TO LIFT UP THE HEEL AGAINST, to treat insolently. To LIFT UP THE HORN, to assume an arrogant and scornful demeanor, in allusion to the anc. practice of wearing horns or hornlike ornaments projecting from the foreliead. To LIFT UP THE VOICE, to cry aloud, as an expression of grief or joy, generally the former.—SYN. of 'lift, v.': to heave; upheave; raise; erect; hoist; exalt; heighten; elate; rise.

LIFT, v. lift [Goth. hlifan, to steal]: in OE., to steal. LIFT'ER, n. a thief. Shop-lifter, a thief. Shop-liften, removing goods elandestinely from a shop. Note.—This verb was early confused with preceding entry, though distinct from it—see Skeat.

LIFT, n. lift [Low Ger. lucht, the sky]: in Scot., the sky.

LIG, n. lig: in prov. and old Eng., a lie: see Lie.

LIGAMENT, n. lig'ă-ment [F. ligament—from L. ligamen'tum, a band, a tie—from ligo, I bind: It. ligamento]: anything which ties or unites; the strong fibrous substance which connects the ends of the movable bones. Lig'ament'al, a. -ment'ăl, or Lig'ament'ous, a. -ŭs, binding; composing or resembling a ligament.

LIG'AMENTS, in Anatomy: cords, bands, or membranous expansions of white fibrous tissue; bearing an extremely important part in the mechanism of joints, seeing that they pass in fixed directions from one bone to another, and serve to limit some movements of a

joint, while they freely allow others.

Todd and Bowman, in their Physiological Anatomy, arrange ligaments in three classes: 1. Funicular, rounded cords, such as the external lateral ligament of the knee-joint, the perpendicular ligament of the ankle-joint, etc.; 2. Fascicular, flattened bands, more or less expanded, such as the lateral ligaments of the elbow-joint, and the greater majority of ligaments in the body; 3. Capsular, which are barrel-shaped expansions attached by their two ends to the two bones entering into the formation of the joint, which they completely but loosely invest: they constitute one of the chief characters of the ball-and-socket joint, and occur in the shoulder and hip joints.—See Joints: Skeleton.

LIGAN, n. lī'găn [AS. licgan; Scot. lig; Icel. liggja, to lie, to lodge: comp. L. ligans, binding or tying]: goods sunk in the sea, but tied to a buoy with the view of being recovered again: see LAGAN: FLOTSAM under FLOTAGE: JETSAM.

LIGATION, n. $l\bar{\imath}$ - $g\bar{a}'sh\bar{u}n$ [L. $lig\bar{a}tus$, bound, tied]: the act of binding; the state of being bound.

LIGATURE, n. līg'ā-tūr [F. ligature—from L. ligatūra -from ligarë, to tie]: anything that ties or binds; a bandage. In Surgery, the thread tied round a blood-vessel to stop bleeding or for removal of tumors. The ligatures most commonly used consist of strong hempen or silk threads; but catgut, horsehair, etc., have been employed by some surgeons; also gold, silver, or platinum wire. A ligature should be tied around an artery with sufficient tightness to cut through its middle and internal walls. See ARTERY: ANEURISM. Although the operation of tying arteries was clearly known to Rufus of Ephesus, who lived in the time of Trajan, it subsequently fell into into desuetude, till rediscovered by Ambrose Paré 16th century. LIGATU'RA [It., binding]: in music, frequently marked by a slur, thus , placed over certain notes for the purpose of showing that they are to be blended together; if in vocal music, that they are to be sung with one breath; used also in instrumental music, to mark the phrasing.

LIGHT, n. lit [Goth. liuhath; Ger. licht, light: AS. liht, bright: L. lucere; F. luire, to shine: Gr. luchnos, a light, a lamp]: the agent or medium by which objects are rendered visible to the eye; day; anything which gives light; a candle; a lamp (see ELECTRIC LIGHT): a figured compartment of a stained-glass window; a pane; knowledge; means of knowing; explanation; aspect; point to which the view is directed; situation; existence; time of prosperity; gladness; in painting, the illuminated part of a picture, as opposed to shade: ApJ. not dark or obscure: bright; elear: V. to set on fire; to give light to; to guide by light; to kindle or ignite. LIGHT'ING, imp.: N. the act of that which lights. LIGHT'ED, pt. and pp. did LIGHTER, n. lit'er, one who or that which lights. LIGHTS, n. plu. in arch., the opening, or group of three narrow windows, between the stone mullions of a large window; in eccles. (see Lights, Use of, in Public Wor-SHIP). LIGHT'LESS, a. without light; dark. LIGHT-BALL, a hollow ball of paper filled with a composition which, when set fire to, throws out a bright light. Light-dues, tolls levied on ships for the maintenance of lighthouses. LIGHT-HOUSE (see below). LIGHTSHIP, a vessel bearing a light at night, anehored on a bank or near shoals, to guide vessels. Northern lights, the aurora borealis. ZODIACAL LIGHT, see that title. To BRING TO LIGHT, to reveal; to discover. To come to light, to be discovered. THE LIGHT OF THE COUNTENANCE, favor; smiles. To see THE LIGHT, to be born; to eome into existence. STAND IN ONE'S OWN LIGHT, to be the means of hindering one's own advancement or one's own good.

LIGHT, a. līt [Ger. leicht; Dut. licht; Ieel. léttr; Goth. leihts; OH. G. léht; L. lévis, light, of small weight]: easy to be raised or earried; not difficult; easy to be borne or performed; active; nimble; swift; unencumbered; not dense or heavy; not of standard weight, as a coin; not laden, as a ship; not violent, as a wind; not grave, serious, or steady; loose and irregular, as eonduet; loose and open, as a soil; not chaste; under the influence of liquor. LIGHT'LY, ad. -li, with but little weight, as to tread lightly; easily; readily; without reason; eheerfully; not chastely; without due consideration; with levity. LIGHT'-NESS, n. -nes, want of weight; nimbleness; agility; levity; inconstancy; giddiness; wantonness. Lights, n. plu. *līts*, the lungs in animals, as being the lightest part of the body. LIGHT-ARMED, not heavily armed. LIGHT-FINGERED, nimble at lifting or eonveying with the fingers; in a bad sense, applied to a piekpoeket. FOOTED, nimble with the feet. LIGHT-HEADED, giddy; thoughtless; wandering, as in a fever. Light-Hearted, free from anxiety; gay. LIGHT INFANTRY, troops lightly armed. LIGHT-MINDED, unsettled; unsteady. To MAKE LIGHT OF, to treat as of little consequence. To SET LIGHT BY, to under-value; to slight.—Syn. of 'light': active; unencumbered; unembarrassed; slight; unsteady; unsettled; sandy; gay; airy; trifling; wanton; unchaste; unimportant; inconsiderable; small; inconsiderate; volatile—of 'lightness:' volatility; flightiness; instability; unsteadiness; airiness; gayety; sprightliness; ease; facility; briskness; swiftness.

LIGHT, v. līt [from Eng. alight: OE. lift; Ger. luft; Low Ger. lucht, the sky, the air (see Light 2 and Lift 1)]: to descend from a horse or earriage; to settle; to stoop from flight; to fall in a particular direction; to fall; to strike on. Light'ing, imp. Lighted, pp. līt'ēd. To light on a thing, to fall in with it—that is, to have light on it.

LIGHT: the subject of the science of Optics (q.v.). Its principal phenomena are here adverted to, with the hypotheses advanced to explain them. Everyone knows that L. diverges from a luminous centre in all directions, and that its transmission in any direction is It travels with great velocity, which has been ascertained, by observations on the eclipses of Jupiter's satellites and other means, to be about 186,772 m. per second. Shadows (q. v.) are a result of its straight transmission; and it follows from its diverging in all directions from a luminous centre, that its intensity diminishes inversely as the square of the distance from the centre. When it falls on the surfaces of bodies, it is reflected from them, regularly or irregularly, totally or partially, or is partly or wholly transmitted or refracted through them. For the phenomena of the reflection and of the refraction of L., see respectively CATOPTRICS: DIOPTRIC. The facts of observation on which eatoprics is founded are two: 1. In the reflection of L., the incident ray, the normal to the surface, and the reflected ray are in one plane: 2. The angle of refleetion is equal to the angle of incidence. Similar to these are the physical laws on which dioptrics is founded. When a ray of homogeneous L. is incident on a refracting surface, 1. The incident and refracted ray lie in the same plane as the normal at the point of incidence and on opposite sides of it; 2 The sine of the angle of ineidence, whatever that angle may be, bears, to the angle of refraction, a ratio dependent only on the nature of the media between which the refraction takes place, and on the nature of the light. In stating these laws, we have hinted at L. being of different kinds. erly it was not supposed that eolor had anything to do with L.; now, there is no serious dispute but that there are lights of different colors (see Chromatic and Spec-TRUM), with different properties, though obeying the same general laws. Among the most striking phenomena of L. are those treated under the head Polariza-TION (q.v.). Next to these in interest are the phenomena of double refraction: see Refraction, Double. For an account of the chief chemical properties of light, see Photography: Spectrum. See also, for phenomena not noticed above, ABERRATION: DIFFRACTION: DIS-PERSION: INTERFERENCE.

Two hypotheses have been advanced to explain the different phenomena of L., viz., the theory of emission, or the corpuscular theory, and the theory of vibration, or the Undulatory Theory (q.v.). There is also a recent earnest advocacy, though not by men eminent in science, of a theory that L. is an 'immaterial substance' (see Substantialism). This theory however makes its strongest attack on the accepted modern science in reference to sound. According to the corpuscular theory, L. is an attenuated imponderable substance, whose colors depend on the velocity of its transmission. It regards reflection as analogous to the rebounding of elastic bodies; while, to explain refraction, it assumes that there are interstices in transparent bodics, to allow of the passage of the particles of L., and that these particles are attracted by the molecules of bodies—their attraction combining with the velocity of the particles of L. to cause them to deviate in their course. The Undulatory The-ORY (q.v.) assumes that L. is propagated by the vibrations of an imponderable matter termed Ether (q.v.). this view, L. is somewhat similar to sound (see Inter-FERENCE). Newton was the author of the former theory, and Huyghens may be regarded as the author of the The theories were long rivals, but now the thelatter. ory of undulations has triumphed over the other. Its soundness is claimed to rest on similar evidence to that which we have for the theory of gravitation: it had not only satisfactorily accounted for all the phenomena of L., but it has been the means of discovering new phenomena. In fact, it has supplied the philosopher with the power of prescience in regard to its subject. Those who wish to study the theory may advantageously consult its popular exposition by Young (Lectures on Natural Philosophy, London 1845), and Lloyd's Wave Theory of Light (Dublin 1856). The mathematical theory is very fully investigated in Airy's Mathematical Tracts.

LIGHT, in Law: involving the question of legal right to light. This is one of the rights incident to the ownership of land and houses. When it is claimed in such a way as to interfere with a neighbor's absolute rights, it is called, in England and the United States, an Easement (q.v.), and in Scotland a Servitude (q.v.). In England and the United States, the right to L., as between neighbors, is qualified in this way, and forms a subject of frequent dispute in towns and populous places. If A build a house on the edge of his ground with windows looking into B's field or garden which is adjacent, B may next day, or any time within 20 years, put up a house or screen close to A's windows, and darken them all, for one has as good a right to build on his own land as the other on his. But if B allows A's house to stand 20 years without building, B is for ever after prevented from building on, his own land so as to darken A's lights, for A then acquires a prescriptive right to an easement over B's In the Roman law, a person was entitled not

LIGHTEN-LIGHTFOOT.

only to a servitude of L., but also of prospect; but in this country the right of prospect, or of having a fine view, is not recognized by the law, except so far that the lights, after 20 years, must not be sensibly dark ened.—In Scotland, a servitude of light may exist in like manner, but it cannot be constituted except by special grant; also a neighbor, B, may after 20 years, or any time, build on his own land, and darken A's windows, provided he do not act wantonly, emulously, or so as to cause a nuisance.

LIGHTEN, v. $l\bar{\imath}t'n$ [Goth. liuhath, light: Ger. licht, light; leuchten, to lighten (see Light 1)]: to fill with light; to shine like lightning; to flash, as lightning; to illuminate. Lightening, imp. $l\bar{\imath}t'n$ -lng. Lightened, pp. $l\bar{\imath}t'nd$. Lightning, n. $l\bar{\imath}t'nlg$, the electric flash which produces the report called thunder, and is seen before the thunder is heard (see below: also Lightning-Conductor: Lightning-Prints).

LIGHTEN, v. $l\bar{\imath}t'n$ [Low Ger. lichten; AS. lihtan, to lift, to lighten]: to make lighter or less heavy; to make less burdensome or afflictive; to cheer; to alleviate. Lightening, imp. $l\bar{\imath}t'n$ - $\bar{\imath}ng$, making lighter; cheering. Lightning, n. $l\bar{\imath}t'n\bar{\imath}ng$, in OE., a mitigation or apparent abatement of symptoms, as before death. Lightened, pp. $l\bar{\imath}t'nd$.

LIGHTEN, v. $l\bar{\imath}t'n$ [from Eng. Light 3]: in OE., to fall; to descend; to settle; as, 'O Lord, let Thy mercy lighten upon us.'

LIGHTER, n. līt'er [Dut. ligter, a lighter; ligter-man, a lighter-man—from ligt, not heavy: Eng. light, of small weight, which see]: a large flat-bottomed boat used in loading and unloading vessels whose draught prevents their coming close to the landing-place. Light'erage, n. -āj, the price paid for the use of a lighter. Light'eraman, n. -mān, one who assists to manage a lighter, and the loading and unloading of ships.

LIGHTFOOT, $lit'/\hat{u}t$, John, D.D.: one of the earlier Hebrew scholars of England: 1602, Mar. 29—1675, Dec. 6; b. Stoke-upon-Trent, Staffordshire; son of Thomas L., vicar of Uttoxeter. He studied at Christ's College, Cambridge, and, after entering into orders, became chaplain to Sir Rowland Cotton, who, being himself a good Hebrew scholar, inspired L. with a desire to become one In 1627, appeared his Erubhim, or Miscellanies Christian and Judaical, dedicated to Sir Rowland, who, 1631, presented him to the rectory of Ashley in Staffordshire. Subsequently, he removed to London, that he might have better opportunities for the prosecution of his favorite study; and in 1642 he was chosen minister of St. Bartholomew's, to the parishioners of which he dedicated Handful of Gleanings out of the Book of Exodus (London 1643). His most important work is Horæ Hebraica et Talmudica, etc. (Cambridge 1648), recently re-edited by R. Ganden (4 vols., Oxtord 1859). L. was

LIGHTFOOT.

one of the Assembly of Divines who met at Westminster 1643, and in the debates that took place there showed decided predilection for Pres. church government. In the same year, he was chosen master of Catharine Hall, Cambridge, and 1655 vice-chancellor of the university. At the Restoration, he complied with the terms of the Act of Uniformity. He died at Ely. He was the greatest Hebraist in the England of his day, and his fame as a scholar remains.

LIGHT'FOOT, JOSEPH BARBER, D.D.: Bishop of Durham, England: 1828, Apr.—1889, Dec. 21; b. Liverpool: distinguished scholar and theologian. He graduated at Trinity College, Cambridge, 1851; was elected fellow 1852; gained the Norris Univ. prize 1853; was ordained 1854; and became tutor in Trinity College 1857, Hulsean prof. of divinity at Cambridge 1861, canon of St. Paul's Cathedral, London, 1871, and Lady Margaret prof. of divinity at Cambridge 1875. In 1864 he received the degree D.D.; 1866 was Whitehall preacher; 1868 became examining chaplain to the abp. of Canterbury; 1874-5 was select preacher at Oxford; and 1879 reluctantly accepted the bishopric of Durham. He was considered the most learned New Test. scholar in the Church of England. He had notable breadth of mind, and modesty and gentleness of disposition. His publications included commentaries on the epistles of Paul to the Galatians (1865), Philippians (1868), Colossians and Philemon (1875); incomplete work on the Apostolic Fathers—epistles ascribed to Clement of Rome (1869, new ed. 1890), and Ignatius and Polycarp (1885, 2d ed. 1889); On a Fresh Revision of the English New Testament (1871); an edition of Dean Mansel's treatise on The Gnostic Heresies of the First and Second Centuries (1875); and four volumes of sermons, posthumous (1890).

LIGHT'-HOUSE: a building on some conspicuous point of the sea-shore, island or rock, from which a light is

exhibited at night as a guide to mariners.

The early history of light-houses is obseure. referred to in early Greek literature were nothing more than beaeon fires kindled on headlands, though as early as B.C. 280 there was built the famous L.-II. on the island of Pharos off Alexandria in Egypt, connected with the city by an artificial roadway. It was a massive stone structure, about 400 ft. high, whose light is said to have been visible more than 40 m. It stood about 1,600 years until destroyed by an earthquake. More modern is the remarkable L.-H. of the tower of Cordonan, at the mouth of the Garonne, in the Bay of Biseay, on a dangerous ledge of rocks. 26 years were spent in building it, and it was finished 1610. Its base, built solid of eut stone, is 135 ft. in diameter at the bottom, 125 ft. at the top, and 16 ft. high. On this is reared the tower, in the form of a frustum of a cone 50 ft. in diameter at its base, and 115 ft. high, surmounted by a lantern dome. For the first 100 years a fire of oak wood furnished the light; then eaal was used; in 1823 the first Fresnel lens ever made was placed in it.

The light-houses of the United Kingdom now number, with harbor-lights, more than 500 stations, and include some of the finest specimens of engineering, such as Douglass's Eddystone (sueeessor to Smeaton's), R. Stevenson's Bell Rock, A. Stevenson's Skerryvore, and Walker's Bishop Rock. Somewhat similar structures have been erected on the Wolf Rock in the English Channel by Douglass, and on the Duheartaeh Rock, Argyleshire, and on the Chiekens, off the Isle of Man, by D. & T. Stevenson. For the construction of some of these interesting

works, see their respective titles.

The first light-houses in the United States were generally rough towers of stone or wood surmounted by large iron lanterns. Such structures were in use before 1789 at the ports of Portland, Portsmouth, Newburyport, at Cape Ann, Boston, Plymouth, Nantueket, Newport, New London, New York, the eapes of the Delaware and the Chesapeake, the port of Charleston, and the mouth of the Savannah river. These all were eeded to the U.S. govt. about the time of the adoption of the federal constitution. They were generally very imperfectly constructed and equipped, and have nearly all been rebuilt. There are now in the United States 620 light-houses, all of them since about 1852, supplied with the Fresnel system of lighting; there are besides these, 21 light-vessels in use, and about 3,000 buoys and beaeons. Their maintenance costs annually nearly \$2,000,000, paid out of the U.S. treasury, while in all other countries the cost of their light-houses is defrayed by a direct or indirect tax on commerce. There are many fine light-houses in the United States. Among those worthy of note is the one on Minot's Ledge off the town of Cohasset, about 20 m. e.s.e. of

Boston, at a point very dangerous to incoming vessels. It is about 1½ m. from the nearest land, and as the rock on which it is built is out of water only a few minutes at a time, the work of building it was extremely difficult. In 1847 congress made an appropriation for the erection of an octagonal iron-pile light-house, which was completed 1849, but was destroyed in a storm, 1851, Apr. Next year congress made an appropriation for a new L.-H., on which work was begun 1855; the foundation was finished 1857, and 4 stones were laid the same year; next year 6 courses of stone were laid; 1859 the stone-work was completed, and 1860 the entire structure. It is of granite, the lower 40 ft. solid, on a base 30 ft. in diameter; whole height of the stone-work, 88 ft. The stones are dove-tailed, and the courses fastened together by wrought-iron dowels. In the n. part of Lake Huron, on Spectacle reef, is a L.-H. built to resist masses of floating ice as well as the waves. It is in the form of the frustrum of a cone, 32 ft. in diameter at the base, 18 ft. near the top, its stone-work 93 ft. high, of which the lower 34 ft. are solid, on a base 11 ft. below the surface. finished 1874, June 1, and cost \$375,000. Cast-iron lighthouses are built of tiers of cast-iron plates, held together by bolts and flanges on the inside, and then filled in solid with masonry and concrete. The first one was built 1842, at Point Morant, Jamaica. The 'screw-pile' system of light-house building was invented by Alex. Mitchell, of England, and has been used in different parts of Great Britain. The main feature of it is that the piles on which the structure rests are in the form of screws, and are driven into the sand or soil in the manner of a corkscrew. The first erected in the United States is at the mouth of Delaware Bay, 8 m. from the ocean, on a spot very much exposed to waves and ice. It was finished 1850, and is protected by an ice-breaker composed of screwpiles around it driven independently of it. One at Sand Key, Florida Reefs, is built on 16 piles with one additional in the centre: they are 8 in. thick, with a screw 2 ft. in diameter at the lower ends, which penetrate 12 ft. into the reef. Its foundation is 50 ft. in diameter, and it rises 120 ft. above the level of the sea. The tower frame-work consists of tubular cast-iron columns framed together with wrought-iron ties at the joints, and braced diagonally on the faces of each tier. There are more than 50 such light-houses in the United States. The principle has been adopted of building all first-class light-houses of fire-proof material.

LIGHT-HOUSE BOARD (of the United States): organized according to act of congress, 1852, Aug. 31, and consisting of the secretary of the treasury, who is president ex officio, 2 naval officers of high rank, 2 army officers of the corps of engineers, 2 civilians of scientific attainments, and an officer of the navy as secretary. It is required to meet 4 times every year, but actually meets nearly every week, at Washington, D. C. It has control of the entire light-

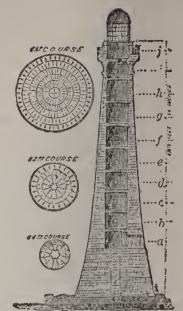
PLATE 1.



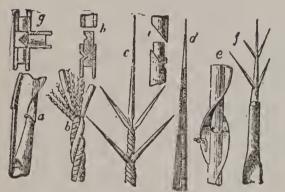
Figure Wearing a Lifepreserver.



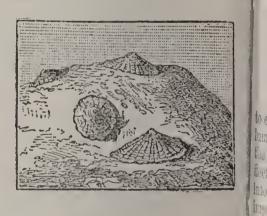
L, Ligula.



Skerryvore Light-house: a, Water tanks; b, Coal; c, Workshop; d, Provisions; e, Kitchen, f, g, Bedrooms; h, Officers' room; i, Oil; j, Light room.



Lightning-Conductor. -a, b, e, Various forms of Rods; c, d, f, Various forms of Tips; g, h, i, Various forms of Attachments.



Limpets.

2 m

ani of b

a red



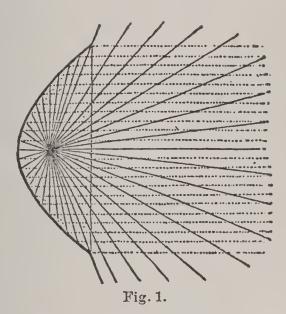
White Lily (Lilium canaldum).



Ling (Lota molva),

house system of the United States, including the construction and management of all lights, buoys, beacons, etc., but always subject to the secretary of the treasury, so that it is virtually a branch of the treasury dept., by which its annual expenses are estimated and provided for. It has divided the waters and coasts of the United States into 13 districts, each having an inspector, detailed from the army or navy, who controls the light-house operations of his district, subject to the board, to whom he must make annual reports, with recommendations, etc., for its action. Two secretaries attend to the routine-work of the board.

METHOD OF LIGHTING.—Catoptric or Reflecting System.—All of those rays of light proceeding from the foeus of a paraboloid (fig. 1), which fall upon its surface, are reflected parallel to the axis so as to form a solid beam of light. When a series of such reflectors are arranged elose



to each other round a eylinder in a light-house, they illuminate constantly, though not with equal intensity, the whole horizon. As the property of the parabolic reflector is to collect the rays incident upon its surface into one beam of parallel rays, it would be absolutely impossible, were the flame from which the rays proceed a mathematical point, to produce a light which would illuminate the whole horizon, unless there were an infinite number of reflectors. But as the radiant, instead of being a mathematical point, is a physical object, consisting of a flame of very notable size, the rays which come from the outer portion of the luminous cone proceed, after reflection, in such divergent directions, as to render it praetically possible to light up, though unequally, the whole horizon. The useful divergence produced in this way by a burner of one inch in diameter. with a focal distance of four inches, is in the horizontal plane about 14° 22'. The whole horizon may thus be il-Imminated by reflectors.

If, for the purpose of distinction, it is desired to show a revolving light, then several of those reflectors are

placed with their axes parallel to each other on each of the faces of a four-sided frame, which is made to revolve. In such a case the mariner sees a light only at those times when one of the faces of the frame is directed toward him; at other times he is left in darkness. rotation of the frame upon its axis thus produces to his eye a succession of light and dark intervals, which enables him to distinguish it from the fixed light which is constantly in view in every azimuth. The distinction of a red light is produced by using a chimney of red instead of white glass for each burner. The flashing or scintillating light, giving, by rapid revolutions of the frame, flashes once every five seconds, which is one of the most striking of all the distinctions, was introduced by Robert Stevenson, engineer of the Northern Lighthouses, 1822, at Rhinns of Islay, Argyleshire. The same engineer introduced also what has been called the *inter*. mittent light, by which a stationary frame with reflectors is instantaneously eclipsed, and is again as suddenly revealed to view by the vertical movement of opaque cylinders in front of the reflectors. The intermittent is distinguished from the revolving light, which also appears and disappears successively to the view, by the suddenness of the eclipses and of the reappearances, whereas in all revolving lights there is a gradual waxing and waning of the light.

At Troon harbor Wilson introduced an intermittent light produced by a beautifully simple contrivance for suddenly lowering and raising a gas-flame. Robert Louis Stevenson has proposed an intermittent light of unequal periods by causing unequal sectors of a spherical mirror to revolve between the flame, and a fixed dioptric apparatus (such as that shown in figs. 3 and 4). The power of the light is increased by the action of the spherical mirror, which acts also as a mask in the opposite azi-The number of distinctive light-house characteristics has not yet been exhausted in practice, for various other distinctions may be produced by combination of those already in use; e.g., revolving, flashing, or intermittent lights might be made not only red and white alternately, but two red or white, with one white Similar combinations could be employed where two lights are shown from the same, or from separate

towers.

Dioptric System.—Another method of bending the diverging rays proceeding from a lamp into such directions as shall be useful to the mariner, is that of refraction. If a flame be placed in the focus of a lens of the proper form, the diverging rays will be bent parallel to each other, so as to form a single solid beam of light. Augustin Jean Fresnel (1788–1827) was the first to proprose and to introduce lenticular action into light-house illumination, by the adoption of the annular or built lens, which had been suggested as a burning instrument by Buffon and Condorcet. He also, in conjunction with

Arago and Mathieu, used a large lamp having four concentric wicks. In order to produce a revolving light on the lenticular or dioptric system, a different arrangement was adopted from that for the catoptric system. The large lamp was now made a fixture, and four or more annular lenses were fitted together, so as to form a frame of glass which surrounded the lamp. When this frame is made to revolve round the lamp, the mariner gets the full effect of the lens whenever its axis is pointed toward him, and this full light fades gradually into darkness as the axis of the lens passes from him. In order to operate upon those rays of light which passed above the lens, a system of double optical agents was employed by Fresnel. These (see fig. 2) consisted of a

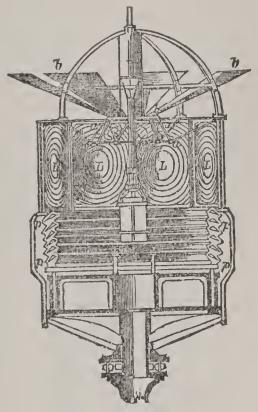


Fig. 2.

pyramid of lenses, a, with mirrors, b, placed above at the proper angle for rendering the rays passing upward parallel to those which came from the annular lens, L. But Fresnel did not stop here, for, in order to make the lenticular system suitable for fixed as well as revolving lights, he designed a new optical agent, to which the name of cylindric refractor has been given. This consisted of cylindrical lenses, which were the solids that would be generated were the middle vertical profile of an annular lens made to circulate round a vertical axis. The action of this instrument is obviously, while allowing the rays to spread naturally in the horizontal plane, to suffer refraction in the vertical plane. The effect of this instrument is therefore to show a light of equal intensity constantly all round the horizon, and thus to form a better and more equal light than that formerly

produced for fixed lights by parabolic reflection. It is obvious, however, that the diverging rays which were not intercepted by this cylindric hoop, or those which would have passed upward and been uselessly expended in illuminating the clouds, or downward in uselessly illuminating the light-room floor, were lost to the mariner; and in order to render these effective, Fresnel ultimately adopted the use of what has been called the internal or total reflection of glass; and here it is necessary to explain that one of the great advantages of the action by glass over reflection by metal is the smaller quantity of light that it absorbs. It has been ascertained that there is a gain of nearly one-fourth (.249) by employing glass prisms instead of metallic reflectors for light-house illumination. There were therefore introduced above and below the cylindric refracting-hoop which we have described, separate glass prisms of triangular section, the first surface of each of which refracted to a certain extent any ray of light that fell upon it, while the second surface was placed at such an angle as to reflect, by total reflection, the ray which had before been refracted by the first surface; and the last or outer surface produced another refraction, which made the rays finally pass out parallel with those refracted by the central cylindric hoop. The light passing above the cylindric hoop was thus by refractions and reflections bent downward, and that falling below was bent upward, so as to be made horizontal and parallel with that from the re-

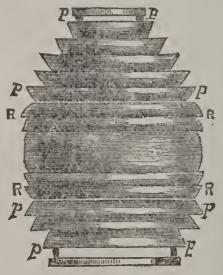


Fig 2.

fracting hoop. Figs. 3 and 4 represent in elevation and vertical section this, which is the most perfect of Fresnel's inventions in light-house illumination, especially when made in pieces of the rhomboidal form, and used in connection with the diagonal framing introduced by Alan Stevenson. In the fig. p shows the refracting and totally reflecting prisms, and R the cylindric refractor.—It is evident that, so far as regards fixed lights, which are required to illuminate constantly the whole of the horizon with equal intensity, the dioptric light of Fresnel with

Alan Stevenson's improvements is a perfect instrument. But the case is different as regards revolving lights, or

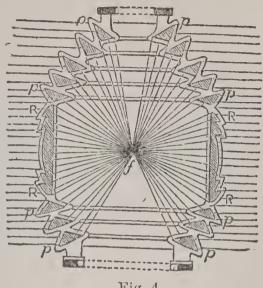


Fig. 4.

those where all the rays have to be concentrated into one or more beams of parallel rays. To revert to the parabolic reflector, it must be obvious (see fig. 1) that all rays which escape past the lips of the reflector (shown by hard lines in the diagram), never reach the eye of the mariner, while, if we return to the dioptric revolving light of Fresnel (fig. 2), we find that those rays which escape past the lens are acted on by two agents, both of which cause loss of light by absorption. The loss occasioned by the inclined mirrors (fig. 2), and in passing through the pyramidal inclined lenses, was estimated by Fresnel himself at one-half of the whole incident rays. In order to avoid this loss of light, Thomas Stevenson proposed, 1849, to introduce an arrangement by which the use of one of these agents is avoided, and the employment of total reflection, which had been successfully employed by Fresnel for fixed lights, was introduced

with great advantage for revolving lights.

'This effect may be produced in the case of metallic reflectors by the combination of an annular lens, L (fig. 5); a parabolic conoid, a, truncated at its parameter, or between that and its vertex; and a portion of a spherical mirror, b. The lens, when at its proper focal distance from the flame, subtends the same angle from it as the outer lips of the paraboloid, so that no ray of light coming from the front of the flame can escape being intercepted either by the paraboloid or the lens. spherical reflector occupies the place of the parabolic conoid which has been cut off behind the parameter. The flame is at once in the centre of the spherical mirror, and in the common focus of the lens and paraboloid. The whole sphere of rays emanating from the flame may be regarded as divided into two hemispheres. Part of the anterior hemisphere of rays is intercepted by the lens, and made parallel by its action, while the remainder

is intercepted by the paraboloidal surface, and made parallel by its action. The rays forming the posterior

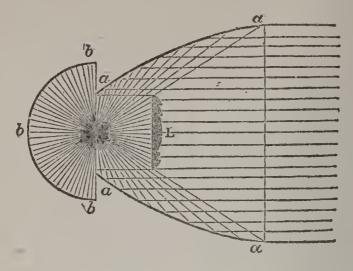


Fig. 5.

hemisphere fall on the spherical mirror behind the flame, and are reflected forward again, through the focus in the same lines, but in opposite directions to those in which they came, whence passing onward, they are in part refracted by the lens, and the rest are made parallel by the paraboloid. The back rays thus finally emerge horizontally in union with the light from the anterior hemisphere. This instrument, therefore, fulfils the necessary conditions, by collecting the entire sphere of diverging rays into one beam of parallel rays without employing any unnecessary agents.'

What has been just described is what Stevenson terms a catoptric holophote. What follows is a description of the dioptric holophote, in which total reflection, or the most perfect system of illumination, is adopted. The front half of the rays is operated upon by totally reflecting glass prisms (p, p, fig. 6), similar in section to those

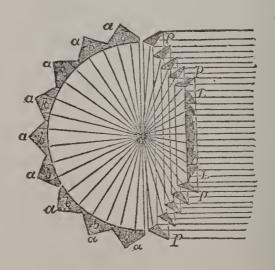


Fig. 6.

applied by Fresnel for fixed lights; but instead of being curvilinear in the horizontal plane only, they are curvilinear in the vertical plane also, and thus produce, in

similar to what is effected by the parabolic mirror (fig. 1). The rays passing backward fall upon glass prisms, ab, ab, which produce two total reflections upon each ray, and cause it to pass back through the flame, so as ultimately to fall in the proper direction upon the dioptric holophote in front, so that the whole of the light proceeding from the flame is thus ultimately parallelized by means of the smallest number and the best kinds of optical agents. It is a remarkable property of the spherical mirror, ab, that no ray passes through it, so that an observer standing behind the instrument perceives no light, though there is nothing between him and the flame but a screen of transparent glass.

Where the light is produced by a great central stationary burner, the apparatus assumes the form (fig. 7) of a polygonal frame, consisting of sectors of lenses and holophotal prisms, which revolves round the flame, and each face of which produces a beam of parallel rays. Hence, when the frame revolves round the central flame, the mariner is alternately illuminated and left in darkness, according as the axis of each successive face is pointed toward him or from him. The difference between the revolving light of Fresnel and the holophotal light, readily appears by comparing fig. 7 and fig. 2, in the former of which, one agent is enabled to do the work of two agents in the latter, while total reflection, or that by which least light is lost, is substituted for metallic reflection. The dioptric holophotal system, or that by which total reflection is used as a portion of the revolving

apparatus, was first employed on a small scale 1850 at the Horsburgh Light-house, and on the large scale 1851, at North Ronaldshay in Orkney. Since that date, this system has been almost universally introduced prints Europe and America.

Azimuthal Condensing Light.

—The above is a description of the general principles on which light-houses are illuminated. In placing a light in some situations, regard, however, must be had to the physical peculiarities of the locality; the following plans of Thomas Stevenson are examples. In fixed lights of the ordinary construction, the light is distributed, as already explained equally all round

the horizon, and is well adapted for a rock or island surrounded by the sea. But where it is necessary to illuminate only a narrow Sound, as shown by the chart, fig. 8, it is obvious that the requirements are very dif-

rerent. On the side next the shore, no light is required at all; across the Sound, a feeble light is all that is necessary, because the distance at which it has to be seen is small, owing to the narrowness of the channel; while

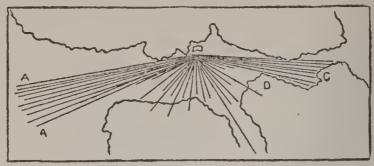


Fig. 8.

up the Sound (DC) and down the Sound (AA), the sea to be illuminated is of greater or less extent, and requires a corresponding intensity. If the light were made sufficiently powerful to answer for the greater distance, it would be much too powerful for the shorter distance across the Sound. Such an arrangement would occasion an unnecessary waste of oil, while the light that was cast on the landward side would be altogether useless. Fig. 9 represents (in plan) the condensing light, by which the light proceeding from the flame is allocated in the different azimuths in proportion to the distances at

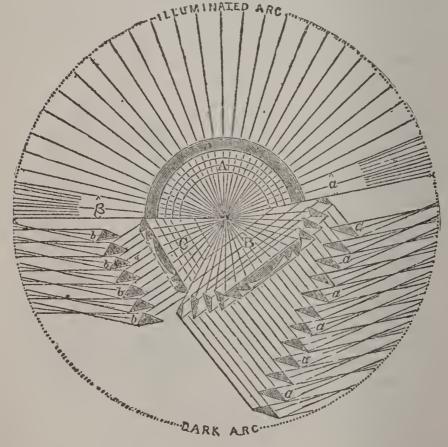


Fig. 9.

which the light requires to be seen by the mariner in those azimuths. Let us suppose that the rays marked a require to be seen at the greatest distance down the Sound,

and those marked β to a somewhat smaller distance up the Sound. In order to strengthen those arcs, the spare light proceeding landward, which would otherwise be lost, is intercepted by portions of holophotes, B and C. subtending spherical angles proportioned to the relative ranges and angular spaces of the arcs α and β . The portions of light thus intercepted are parallelized by the holophotes, and fall upon straight prisms a, a, and b, b, respectively, which again refract them in the horizontal plane only; and, after passing through focal points (independent for each prism), they emerge in separate equal beams, and diverge through the same angles as a and β respectively. In this way, the light proceeding up and down the Sound is strengthened in the required ratio by utilizing, in the manner described, the light which would otherwise have been lost on the land. These instruments were introduced first at three Sound lights in w. Scotland, 1857, where apparatus of a small size, combined with a small burner, was found to produce, in the only directions in which great power was required, beams of light equal to the largest class of apparatus The saving thus effected in oil, etc., has and burner. been estimated at about £400 or £500 per annum for these three stations.

Apparent Light.—At Stornoway Bay, the position of a sunken rock has been sufficiently indicated by means of a beam of parallel rays thrown from the shore upon certain optical apparatus fixed in the top of a beacon erected upon the rock itself. It was suggested that the light-house should be built on the outlying submerged reef, but the cost would have been very great, and Stevenson's suggestion of the apparent light was adopted.

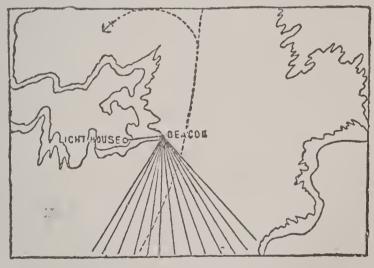


Fig. 10.

By means of this plan (vide chart, fig. 10), the expense of erecting a light-house on the rock itself has been saved, and all the purposes of the mariner served. It has been called an apparent light, from its appearing to proceed from a flame on the rock, while the light in reality proceeds from the shore, about 650 ft. distant, and is refracted by glass prisms placed on the beacon.

Floating Lights are vessels fitted with lights moored at sea in the vicinity of reefs. Prior to 1807, the lantern was hung at the yard-arm. Robert Stevenson then introduced the present system of lanterns, having a eopper tube in the centre capable of receiving the vessel's mast, which passed through the tube, the lights being placed all round. In this way, proper optical appliances can be employed, and the lantern can be lowered on the mast so as to pass through the roof of a house on the deck, where the lamps are filled or trimmed. In 1864, six floating lights were constructed for the Hooghly under the directions of Messrs. Stevenson, in which the dioptrie principle was applied. Eight half-fixed light apparatus of glass with spherical mirrors behind, were placed in the lantern round the mast, so as to show in every azimuth rays from three of them at once.

Differential Lens.—This is an annular lens, eurved to different radii on both sides, so as to increase the divergence in any given ratio. The small are of about 6°, which is unequally illuminated by the lens as presently constructed, may be made of equal intensity throughout by the differential form, or by means of separate straight

prisms placed at the sides.

Sources of Light.—The descriptions above have had reference to the best means of employing a given light. Many attempts have from time to time been made to in-

erease the power of the radiant itself.

Magneto-electric Light.—The electric light, which has of late been greatly developed and improved, and specially adapted to light-house purposes, was introduced under the auspices of the Trinity House of London.

Gas.—The uncertainty and other objections attending the manufacture and use of gas in remote and inaccessible places, have with some exceptions as yet prevented its adoption at light-house stations, but it has been suc-

eessfully used at many harbor-lights.
Oil and Paraffine.—The oil chiefly used in Great Britain is that which goes by the name colza, and the quantities annually consumed at the Northern Light-houses may be stated at 40 gallons for an argand 1 in. in diameter, and 800 gallons for the four-wick burner, which is used in dioptrie lights of the first order. Capt. Doty's burner for paraffine, the best as yet suggested, has been introduced into the French and the Seotch light-houses. Paraffine has been found to give a more intense light than colza at half the eost.

Visibility of Lights.—The distance at which any light can be seen, of course depends on the height of the tower, and varies with the state of the atmosphere. The greatest recorded distance at which an oil-light has been visible is that of the holophotal light of Allepey at Travancore, which has been seen from an elevated situation at a distance of 45 miles. The holophotal revolving light at Baecalieu, Newfoundland, is seen every night in clear weather at Cape Spear-40 nautical miles.

LIGHTING OF BEACONS AND BUOYS.

Power of Light-house Apparatus.—The reflector (25 in. diam.) used in the Northern Light-houses, with a burner of 1 in. diam., is eonsidered equal to about 360 argand flames. The eylindrie refraetor, used in fixed lights, with a four-wick burner, has been estimated at 250; while the annular lens in revolving lights, with the same burner, is equal to about 3,000 argand flames. See LIGHTING OF BEACONS AND BUOYS AT SEA.

LIGHTING OF BEACONS AND BUOYS AT SEA: indicating rock, reef, or shoal, where a light-house could not be built. The usual plan has been that of an 'apnot be built. The usual plan has been that of an parent light,' as at Stornoway (see Light-House). late, electricity has been successfully tried. It has long seemed that for light-houses, electric light has properties which make it superior to all other lights—such as its approach to sunlight and brightness, its power of penetrating fogs, and its independence of atmospheric air, which enables it to be produced in a vacuum or under water. Unfortunately, it requires rare skill to keep it in perfect order, and even then it is not to be absolutely trusted for steadiness. It has nevertheless been in use at Dungeness, s. England, since 1862; and has been brought into sueeessful use at Souter Point, Tynemouth (1871), at South Foreland (1873), and at the Lizard light-house (1878); also at three French light-houses, at Odessa, and at Port Said at the entrance of the Suez canal. Whether or not the electric light is the best for general coast-lighting, it certainly seems the best for beacons, where no light-keeper is on the spot. The ordinary Electric Light (q.v.) may be dismissed as unsuitable for beaeons: at least it requires to be greatly sim-But the sparks from the induction coil INDUCTION OF ELECTRIC CURRENTS) can be made to follow each other so quickly as to appear like a flash surrounded by a luminous haze. Thomas Stevenson proposed 1866 to apply this method to the illumination of beacons. In experiments in that year the electric current passed through a wire 800 ft. long. Suppose beaeon at some distance from the shore, as in the annexed diagram

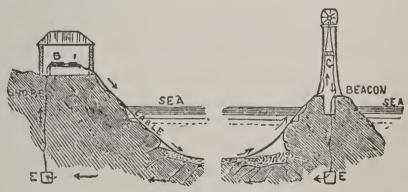


Fig. 1.

(fig. 1). A galvanic battery, consisting of, say, six Bunsen cells, is placed at B in a house upon the shore. From this, the electric current is conveyed along a submarine cable to the beacon, and returns by earth-plates at E, E,

LIGHTING OF BEACONS AND BUOYS.

in the usual manner, to complete the circuit. The induction coil is placed upon the beacon at C, and properly connected with the conducting wire of the cable, so as to make the carrent generated by the battery traverse its primary coil. A wire from each end of its secondary coil is then conveyed to the focus of the optical apparatus, the ends of the two wires being here brought within halfan-inch of each other, and furnished with indestructible points of platinum. The induced or secondary current, in crossing this narrow space, produces the succession of sparks which constitute the light, but (see Induction of ELECTRIC CURRENTS) it does so only at the moment when the current is interrupted or broken. It is consequently necessary to have some means of completing and breaking the galvanic circuit in rapid alternations, so as to produce the flashes in quick succession. The break for

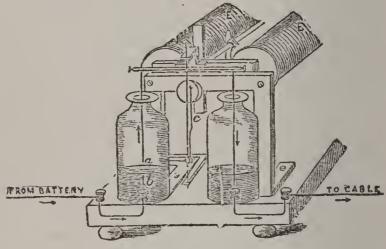


Fig. 2.

this purpose is placed at I, near the battery. Fig. 2 shows this instrument. The difference between it and other mercury or spring breaks is that with them the current is off and on for nearly equal spaces of time; but this is so contrived that the wire at a is three times longer in the mercury, b, than it is out of it; consequently, the current is three times longer on than it is off, thus allowing the soft iron core of the induction coil to be more fully magnetized. The result of this is a secondary current of comparatively high intensity, thence the production of more brilliant sparks between its two terminals. At the moment that the wire at α touches the mercury, the current passes, and the moment it is removed the current stops—the direction of the current being indicated in the figure by the arrows. The wire at a alternately dips and rises by the action of an ordinary electro-magnet, EE, turning the crank c; the second bottle of mercury is used not to break contact, but only to continue the current, for which a spring would answer as well.

By the use of more than one induction coil, the light could be materially increased, so that there seems a likelihood of being able to produce it powerful enough to be seen at the distance of a few miles.—Another

in the said than

LIGHTNING.

method of lighting buoys as well as beacons without electricity has lately been shown practicable. Coal or other inflammable gas can be so compressed that a buoy may be made to receive at once and store up as much condensed gas as will suffice to keep a steady flame burning for a month or more. Gas for this purpose can be economically manufactured from some of the waste products of shale-oil works. The employment of electricity to ring bells on beacons so as to give warning to sailors in foggy weather has been suggested.

LIGHT'NING [see LIGHTEN 1]: electric flash at the sudden discharge of electricity between one group of clouds and another, or between the clouds and the It is essentially the same, on a grander scale, as the spark from an electric machine. Clouds charged with electricity (thunder-clouds), have a peculiarly dark and dense appearance. The height of thunder-clouds is very various: sometimes they have been seen as high as 25,700 ft., and a thunder-cloud is recorded whose height was only 89 ft. above the ground. According to Arago, there are three kinds of L., which he names L. of the first, second, and third classes. L. of the first class is familiarly known as forked-lightning (Fr. éclair en zig-zag): it appears as a broken line of light, dense, thin, and well-defined at the edges; sometimes it is called chain-lightning. Occasionally, when darting between the clouds and the earth, it breaks up near the latter into one or two forks, and is then called birfurcate or trifurcate. The terminations of these branches are sometimes several thousand ft. from each other. On several occasions, it has been attempted to measure trigonometrically the length of forked-lightning, and the result gave a length of several miles. L. of the second class, commonly called sheet-lightning (Ger. Flächenblitz), has no definite form, but seems a great mass of light. has not the intensity of L. of the first class. Sometimes it is tinged decidedly red, at other times, blue or violet. When it occurs behind a cloud, it lights up its outline Occasionally, it illumines the world of clouds, and appears to come forth from the heart of them. Sheetlightning is very much more frequent than forked-lightning. L. of the third kind, called ball-lightning (Fr. globes de feu, Ger. Kugelblitz), describes, perhaps, rather a meteor, which, on rare occasions, accompanies electric discharge, or L. proper, than a phenomenon in itself electrical. It is said to occur in this way: After a violent explosion of L., a ball is seen to proceed from the region of the explosion, and to make its way to the earth in a curved line like a bomb. When it reaches the ground, it either splits up at once, and disappears, or it rebounds like an elastic ball several times before doing so. It is described as being very dangerous, readily setting fire to the building on which it alights; and a lightning-conductor is no protection against it. Ball-lightning lasts for several seconds and, in this respect, differs very

LIGHTNING.

widely from lightning of the first and second classes,

which are, in the strictest sense, instantaneous.

The thunder (Fr. tonnerre, Ger. Donner), which accompanies lightning, as well as the snap attending the electric spark, has not yet been satisfactorily accounted Both, no doubt, arise from a commotion of the air brought about by the passage of electricity; but it is difficult to understand how it takes place. Suppose this difficulty cleared, there still remains the prolonged rolling of the thunder, and its strange rising and falling to account for. The echoes sent between the clouds and the earth, or between objects on the earth's surface, may explain this to some extent, but not fully. A person in the immediate neighborhood of a flash of lightning hears only one sharp report, which is peculiarly sharp when an object is struck by it: a person at a distance hears the same report as a prolonged peal, and persons in different situations hear it each in a different way. This may be so far explained. The path of the lightning may be reckoned at one or two miles in length, and each point of the path is the origin of a separate sound. Suppose, for the sake of simplicity, that the path is a straight line, a person at the extremity of this line must hear a prolonged report; for though the sound originating at each point of the path is produced at the same instant, it is some time before the sound coming from the more distant points of the line reaches the ear. A person near the middle of the line hears the whole less prolonged, because he is more equidistant from the different parts of it. Each listener in this way hears a different peal. according to the position he stands in with reference to the line. On this supposition, however, thunder ought to begin at its loudest, and gradually die away, because the sound comes first from the nearest points, then from points more and more distant. The case, however, is not so. Distant thunder at the beginning is just audible, and no more; then it gradually swells into a crashing sound, and again grows fainter, till it ceases. The rise and fall are not continuous, for the whole peal appears to be made up of several successive peals, which rise and fall as the whole. Some have attempted to account for this modulation from the forked form of the lightning, which makes so many different centres of sound, at different angles with each other, the waves coming from which interfere with each other, at one time moving in opposite directions, and obliterating the sound. at another in the same way, and then strengthening the sound, produced by each. Thunder has never been heard more than 14 m. from the flash. The report of artillery has been heard at much greater distances. is said that the cannonading at the battle of Waterloo was heard at the town of Creil, n. France, about 115 m. from the field.

ACCIDENTS FROM LIGHTNING.—A person struck by lightning is more or less stunged and deprived of con-

LIGHTNING.

sciousness for a time, often, no doubt, by mere fright, in which case the effect is transient; but sometimes in consequence of a shock given to the brain, in which case there is a certain amount of paralysis of motion and sensation. In a case recorded by Boudin (Géographie Médicale, 1857), a gentleman, who had been struck by lightning, remained for an hour and a quarter devoid of any indication of life. The paralysis which usually affects the lower limbs, may last many months. Mr. Holmes, in his article on Accidents from Lightning, in System of Surgery, gives the following list of other affections caused by lightning: 'Burns, more or less extensive; eruptions of erythema or of urticaria, which are said by one author to have reappeared with each succeeding thunder-storm; loss of hair over parts or the whole of the body; wounds; hemorrhage from the mouth, nose, or ears; loss of sight, smell, speech, hearing, and taste; or, in rare cases, exaltation of these special senses; cataract; imbecility; abortion.' For a curious effect of lightning, see LIGHTNING-PRINTS. In reference to the occasional loss of hair, M. Boudin (op. cit.) relates that the capt. of a French frigate, who was struck by light-ning on board his ship, could not shave himself on the following day, the razor not cutting but tearing out his hair. From that day the beard disappeard, and the hair of the scalp, eyebrows, etc., gradually fell off, leaving him entirely bald. The nails of the fingers also scaled away. Sir B. Brodie tells a curious story of two bullocks, pied white and red, which were struck in different storms: in both cases the white hairs were consumed, while the red ones escaped. As a general rule, it seems that persons not killed on the spot usually re-The burns present every degree of intensity; in some (probably exaggerated) cases, we hear of men and animals being reduced to ashes, while in ordinary cases the burns vary from those that are deep and difficult in healing, to mere vesications: they must be treated in the ordinary method. It was believed until recently that the burns are caused by the ignition of the clothes; it appears, however, from various cases collected by Dr. Taylor (Med. Jurisp. 1865, p. 737), that burns are in some cases, the direct result of the electricity. A singular case in Dudley, England, shows that the clothing may be burned without simultaneous injury to the surface of the body; also that a serious burn may be produced on the body though the clothes covering the part may escape combustion. A man was struck by lightning while milking a cow: the cow was killed on the spot, and the man was much injured, there being, after the lapse of 16 hours, a severe burn from his right hip to his shoulder, and covering a large portion of the front and side of the body. His mind was wandering; there were symptoms of inflammatory fever, and he was confined to bed for 17 days, at the end of which time the healing process was not complete. It was found that the right sleeve of

LIGHTNING-CONDUCTOR.

his shirt was burned to shreds, but there was no material

burning of any other part of his dress.

The appearances after death by lightning vary extremely. The body sometimes retains the position which it occupied when struck; in other cases it may be dashed to considerable distance. The clothes are often burned or torn, and have a peculiar singed smell; and metallic substances about the person present signs of fusion, while such as are composed of steel become magnetic. There are generally marks of contusion or laceration; or if they are absent, extreme Ecchymosis (q.v.) at the spot where the current entered or emerged. In addition to wounds and burns, fractures also have been noticed.

The treatment must be directed to the special symptoms, which are liable to great variations. Sir B. Brodie's advice is as follows: 'Expose the body to a moderate warmth, so as to prevent the loss of animal heat, to which it is always liable when the functions of the brain are suspended or impaired, and inflate the lungs, so as to imitate natural respiration as nearly as possible.' These means should be fully tried, as respiratory action has been restored after more than an hour's suspension. Mr. Holmes additionally recommends cold affusion, stimulating enemata, and stimulants by the mouth; and recovery (he states) is apparently hastened by the administration of tonics, especially quinine, and gentle action on the skin by means of baths.

LIGHT'NING-CONDUC'TOR, or LIGHTNING-ROD: metallic rod for protection of buildings by conveying lightning to the earth. The principle of the L.-C. is, that electricity, of two conducting passages, selects the better; and that when it has got a sufficient conducting passage, it is disarmed of destructive energy. If a person holds his hand near the prime conductor of a powerful electric machine in action, he receives long forked stinging sparks, each causing a very sensible convulsion in his frame. But if he holds in his hand a ball, connected with the ground by a wire or chain, the above sensation is scareely, if at all, felt, as each spark occurs: for the electricity, now having the ball and wire passage to the ground, prefers it to the less conducting body. If. instead of a ball, a pointed rod were used, no sparks would pass, and no sensation whatever would be felt. The point silently discharges the prime conductor, and does not allow the electricity to accumulate in it so as to produce a spark; and the quantity passing at a time, even supposing the rod disconnected with the ground, is not sufficient to affect the nerves. If, for the prime conductor of the machine, we substitute the thunder-clouds: for the body, a building; for the convulsive sensation as the evidence of electric power, heating and other destructive effects; for the ball, or rod, and wire, the L.-C., we have the same conditions on a larger natural scale. It is easier, however, to protect a building from light-

LIGHTNING-CONDUCTOR.

ning than the body from the electric spark, as the rod in the one case is a much better conductor, compared with the building, than it is compared with the body, and, in consequence, more easily diverts the electricity into itself.

The L.-C. consists of three parts: the rod, or part overtopping the building; the conductor, or part connecting the rod with the ground; and the part in the The rod is of a pyramidal or conical form (the latter preferable), from 8 to 30 ft. in height, securely fixed to the roof or highest part of the building. Lussac proposes that this rod should consist, for the greater part of its length below, of iron; that it should then be surmounted by a short-sharp cone of brass; and that it should end in a fine platinum needle; the whole being riveted or soldered together to give perfect conducting connection of parts. The difficulty of constructing such a rod has led generally to the adoption of simple rods of iron or copper, whose points are gilt, to keep them from becoming blunt by oxidation. It is of the utmost importance that the upper extremity of the rod should end in a sharp point, because the sharper the point the more is the electrical action of the conductor limited to the point, and diverted from the rest of the conductor. There is thus less danger of the electricity sparking from the conductor at the side of the building into the building itself. Were the quantity of the electricity of the clouds not so enormous, the pointed rod would prevent a lightning-discharge altogether; but even as it is, the violence of the lightning-discharge is considerably lessened by the silent discharging-power of the point previously taking place. According to Eisenlohr, a conical rod, 8 ft. in height, ought to have a diameter at its base of 13.3 lines, and one of 30 ft. a diameter of 26.6 lines.

Formerly the part of the L.-C. forming the connection between the rod and the ground, was generally a prismatic or cylindrical rod of iron (the latter preferable), or a strap of copper; usually now a rope of iron or copper wire is used. Iron wire improves as a conductor when electric currents pass through it; copper wire, in the same circumstances, becomes brittle: an iron rope is much better, therefore, for conducting than a copper one. Galvanized iron is of all materials the best for conductors. The conducting-rod ought to be properly connected with the conical rod either by riveting or soldering or both. Here, as at every point of juncture, the utmost care must be taken that there is no break in the conduction. The conducting-rod is led along the roof, and down the outside of the walls, and is kept in its position by holdfasts fixed in the building. must be no sharp turns in it, but each bend must be made as round as possible. Considerable discussion has arisen as to the proper thickness for the conducting-rod. If it were too small, it would conduct only part of the

LIGHTNING-CONDUCTOP.

electricity, and leave the building to conduct the rest, and it might be melted by the electricity endeavoring to force a passage through it as an insufficient conductor. The Paris Commission, 1823, gave the minimum section of an iron conductor as a square of 15 millimètres (about 3 of an inch) in side, and this they considered quite sufficient in all circumstances. A rod of copper would need to be only $\frac{2}{5}$ of this, as copper conducts electricity about six times more readily than iron. The practice now is to use more metal: iron should be throughout not less than an inch in diameter, copper not less than \(\frac{3}{8} \) of an inch; i.e., an iron conductor should weigh at least 2½ lbs. per ft., and a copper conductor at least half a pound per foot. In leading the conductor along the building, it should be kept as much apart as possible from masses of conducting matter about the building, such as iron beams, machinery, etc.; for these might form a broken chain of conductors communicating with the ground, and divert a portion of the electricity from the lightning-conductor. If the conductor cannot be properly insulated from these masses of metal, the necessary security may be got by putting them in connection with the conductor, so as to form a part of it. Water-runs, leaden roofs, and the like, must, for this reason, all be placed in conducting connection with the conductor.

The portion of the L.-C. which is placed in the ground is as important as the other two. If the lower part of the conductor end in dry earth, it is worse than useless: for when the lightning, attracted by the prominence and point of the upper rod, strikes it, it finds, in all likelihood, no passage through the unconducting dry earth, and, in consequence, strikes off to a part of the ground where it may easily disperse itself and be lost. Whereever it is practicable, a L.-C. should end in a well or large body of water. Water is a good conductor, and having various ramifications in the soil, offers the best facility to the electricity to become dispersed and harmless in the ground. The rod, on reaching the ground, should be led down a ft. and a half, or two ft., into the soil, and then turned away at right angles to the wall from the building in a horizontal drain filled with charcoal, for 12 to 16 ft., and then turned into the well so far that its termination is little likely to be left dry. Where a well cannot be made, a hole 6 inches wide (wider, if possible) should be bored 9 to 16 ft., the rod placed in the middle of it, and the intervening space closely packed with freshly heated charcoal. The charcoal serves the double purpose of keeping the iron from rusting, and of leading away the electricity from the rod into the ground.

Lightning-conductors, when constructed with care, have been proved a sufficient protection from ordinary lightning. The circle within which a L.-C. is efficacious, is very limited. Its radius is generally assumed to be

LIGHTNING-PRINTS.

twice the height of the rod. On large buildings, it is therefore necessary to have several rods, one on each prominent part of the building, all being connected so as to form one conducting system. In ships, a rod is placed on every mast, and their connection with the sea is established by strips of copper inlaid in the masts, and attached below to the metal of or about the keel. See Anderson's Lightning Conductors (1880).

LIGHT'NING-PRINTS: appearances sometimes found on the skin or clothing of men or animals that are either struck by lightning, or are in the vicinity of the stroke. These prints are currently believed to be photographic representations of surrounding objects or scencry. The existence of such prints appears in a theoretical view, highly improbable, as the essential conditions of forming a photographic image are wanting; still, several apparently well-authenticated instances have been recorded. which have led scientific authorities to give at least partial credence to them. One or two instances may give a general idea of L.-P. At Candelaria (Cuba), 1828, a young man was struck dead by lightning near a house, on one of the windows of which was nailed a horse-shoe; and the image of the horse-shoe was said to be distinctly printed on the neck of the young man beneath the right ear. 1830, Nov. 14, lightning struck the Château of Benatonnière, in La Vendée; at the time, a lady happened to be seated on a chair in the salon, and on the back of her dress were printed minutely the ornaments on the back of the chair. 1857, Sep., a peasant-girl, while herding a cow in the dept. of Seine-et-Marne, was overtaken by a thunder-storm, and took refuge under a tree; and the tree, the cow, and herself were struck with lightning. The cow was killed, but she recovered, and on loosening her dress for the sake of respiring freely, she saw a pieture of the eow upon her breast. aneedotes are typical of a great mass of others. tell of metallic objects printed on the skin; of clothes, while being worn, receiving impressions of neighboring objects; or of the skin being pictured with surrounding scenery or objects, during thunder-storms. One object very frequently spoken of as being printed is a neighboring tree. This may be accounted for by supposing that the lightning-discharge has taken place on the skin in the form of the electric brush (see Electricity), which has the strongest possible resemblance to a tree, and that this being in some way or other imprinted on the skin, has led observers to confound it with the neighboring tree. Of other prints, it is difficult to form a satisfactory theory. However, observers have done something in imitation of them. It has been shown, e.g., by German observers, that when a coin is placed on glass, and a stream of sparks poured on it from a powerful electrical machine, on the glass being breathed upon, after its removal, a distinct image of the coin is traced out by the dew of the breath. Mr. Tomlinson, by interposing a pane of glass between the knob of a charged Leyden jar and that of the discharging-tongs, obtained a perfect breath-figure of the discharge on each side of the glass, which bore the most striking resemblance to a tree. With all due allowance for the probable printing-power of lightning, the accounts given of it, in most cases, bear the stamp of exaggeration; and such of them as have been inquired into have been found to dwindle to a small residuum of fact, in which there remained little that was wonderful.

LIGHTS, n. plu.: see under LIGHT 1 and 2.

LIGHTS, Use of, in Public Worship; a practice in the Jewish religion (Ex. xxv. 31-39), and in most of the old Pagan religions, and which is retained in the Roman and the Oriental churches. The use of lights in the night-services, and in subterranean churches, such as those of the early Christians in the catacombs, is easily intelligible; but the practice, as bearing also a symbolical allusion to the 'Light of the World' and to the 'Light of Faith,' was not confined to occasions of necessity, but was from about the beginning of the 4th c. sometimes attached to services in honor of martyrs, and from the beginning of the 5th c., became an occasional, later a usual, accompaniment of Christian worship, especially in connection with the sacramental observance of baptism and the eucharist. The origin of the use of lights in Christian worship was doubtless in the conditions of the church for its first 300 years—exposed to persecution, compelled to secrecy, not allowed to use the light of day, but taking refuge in underground places or within the veil of night. The practice thus became hallowed to the thought of later ages. Later ages also, being times of prosperity and splendor, witnessed a refluent tide of the ancient paganism in elaborate ceremonial. This was in spite of Tertullian's ridiculing (A.D. 205) the heathen folly of 'exposing useless candles at noon-day' (Apol. xlvi.; see also xxxv. and De Idolol. xv.); and in spite of Lactantius, A.D. 303, who testifies against the practice as heathenism (Instit. vi. 2), and of Gregory Nazianzen to the same purport, abt. A.D. 375 (Orat. v. § 35). time of the service in which lights are used has varied much in different ages. St. Jerome speaks of it only during the reading of the gospel; Amalarius, from the beginning of the mass till the end of the gospel; Isidore of Seville, from the gospel to the end of the canon; and eventually it was extended to the entire time of the mass. In other services, also, lights have been used from an early period. Lighted tapers were placed in the hand of the newly baptized, which St. Gregory Nazianzen interprets as emblems of future glory. Indeed, in the Rom. Cath. Church, the most profuse use of lights is reserved for the services connected with For the usage of blessing the Paschal Light, see Holy Week. The material used for lights in churches is either oil or wax; the latter in penitential

LIGHTSOME—LIGNEOUS.

time, and in services for the dead, being of a yellow color. In the Anglican Church, candlesticks, and in some instances candles themselves, are retained in many churches, on the communion table, but they are not lighted. The retention of them is greatly favored by the 'High Church' party, and much disapproved by the 'Low Church' or 'Evangelical' party. In the Congl. and Presb. churches of Britain, America, etc., and usually in all except prelatical churches, symbolical use of lights and candlesticks is rejected as either superstitious or of dangerous tendency.

LIGHTSOME, a. $l\bar{\imath}t's\check{\imath}m$ [light, and some (see Light 2)]: not dark; gay; cheerful; airy. Light'somely, ad. $-l\check{\imath}$. Light'someness, n. $-n\check{e}s$, quality of being light; cheerfulness.

LIGHT-YEAR, in Astronomy: term used to denote the distance that light can travel in a year; taken as the unit in measuring the distances of the fixed stars. It amounts to about 63,500 times the distance between the earth and the sun; = in round numbers 5,894,000,000,000 miles.

LIGN-ALOES, n. līn-ăl'ōz or lĭg-năl'ōz [L. lignum, wood, and Eng. aloes]: aloes-wood, an Indian tree whose wood is fragrant and yields an aromatic perfume; the Aquilāriă ovātă, and Aquilāriā Agal'lŏchum, ord. Aquilariācĕæ; also called eagle-wood.

LIGNEOUS, a. līg'nē-ŭs [L. lig'nĕŭs, of or pertaining to wood—from lignum, wood: It. ligneo]: woody; made of wood; resembling wood. LIGNINE, n. lǐg'nǐn, pure woody fibre; in bot., woody matter which thickens the cell-walls, constituting the essential part of the structure of plants. LIGNITE, n. lig'nīt, wood-coal; or fossil wood imperfectly mineralized, and retaining its original form and structure much more completely than the truly mineral coals, and therefore not improperly described as intermediate between peat and coal. (See COAL). Brown coal, Surturbrand, and Jet, are generally regarded as varieties of lignite. It is of very variable composition, and has wide distribution. In Colorado and Wyoming its beds occupy not less than 50,000 sq. m., and are extensively mined: there are large deposits also in New Mexico, Utah, Nevada, California, Oregon, and Alaska. The fossil plants of lignite are always terrestrial; palms and coniferous trees are among them. Remains of terrestrial mammalia also are found in it. LIGNITIC, a. lig-nit'ik, containing or resembling lignite. Note.—The following four substances are said to be deposited in the tissues of plants in the course of their growth-viz., (1) Lignose, lig'nos, soluble in potash and soda; (2) Lignone, lig'non, soluble in ammonia, potash, and soda; (3) LIGNIREOSE, lig-ner'e-os, soluble in alcohor, etner, ammonia, soda, and potash; (4) LIGNINE, lig'-

LIGNIFEROUS-LIGNUM RHODIUM.

nin, the incrusting matter contained within the cellular tissue, which gives hardness to wood. Like cellulose, of which the cellular tissue is composed, it is insoluble in water, alcohol, ether, and dilute acids, and its chief chemical characteristic is, that it is more readily soluble in alkaline liquids than cellulose. Its exact composition is uncertain, but it is known to consist of carbon, hydrogen, and oxygen, and to differ in its composition from cellulose in containing a greater percentage of hydrogen than is necessary to form water with its oxygen. When submitted to destructive distillation, it yields acetic acid; and that it is the source of the pyroligneous acid (which is merely crude acetic acid) obtained by the destructive distillation of wood, is proved by the fact, that the hardest woods (those which contain the greatest proportion of lignine) yield the largest amount of acid. Lignine is identical with the matiere incrustante of Payen and other French botanists.

LIGNIFEROUS, a. lǐg-nǐf'ér-ŭs [L. lignum, wood; fero, I bear]: yielding or producing wood.

LIGNIFORM, a. lig'ni-fawrm [L. lignum, wood; forma, shape]: resembling wood.

LIGNIFY, v. lig'ni-fi [L. lignum, wood; $fi\bar{o}$, I am made]: to convert into wood; to become wood or woody. Lig'nifying, imp. Lig'nified, pp. -fid. Lig'nifica'-tion, n. $-k\bar{a}'sh\bar{u}n$, the process of converting into wood.

LIGNINE: see under Ligneous.

LIGNIPERDOUS, a. *līg'nĭ-pėr'dŭs* [L. *lignum*, wood; perdĕrĕ, to destroy]: a name applied to insects which destroy wood.

LIGNITE: see under Ligneous.

LIGNITIFEROUS, a. līg'nĭ-tĭf'er-ŭs [Eng. lignite, and L. fero, I bear or yield]: in geol., applied to strata or formations which contain beds of lignite or brown coal.

LIGNUM RHODIUM, līg'nŭm rō'dī-ŭm: kind of wood which occurs as an article of commerce, having a pleasant smell, resembling the smell of roses. It is brought to Europe in strong, thick, and rather heavy pieces, cylindrical but knotty, and sometimes split. They are externally covered with a cracked gray bark; internally, they are yellowish, and often reddish in the heart. They have an aromatic bitterish taste, and, when rubbed, emit an agreeable rose-like smell. This wood comes from the Canary Islands, and is produced by two shrubby and erect species of Convolvulus, with small leaves, C. scoparius and C. floridus. It is the wood both of the root and of the stem, but the latter is rather inferior. An essential oil (Oil of L. R.), having a strong smell, is obtained from it by distillation, and is used for salves embrocations, etc., and also very frequently for adulteration of oil of roses.—Beside this L. R. of the Canary Islands, an American L. R. is a common article of commerce; it is produced by the Amyris balsamifera, native

LIGNUM-VITÆ-LIGULATE.

of Jamaica, and yields an essential of, wery similar to the former. The L. R. of the Levant, now searcely seen in commerce, is the produce of Liquidambar Orientale: from this the name L. R. has been transferred to the other kinds.

LIGNUM-VITÆ, n. līg'nŭm-vī'tē [L. lignum, wood; vitæ, of life]: wood of Guaiacum officinale (nat. ord. Zygophyllaceæ), and probably of some other species, natives of Jamaica and St. Domingo. The hardness and exceeding toughness of this very useful wood was shown by Prof. Voigt to depend on a very peculiar interlacing of the fibres. The heart-wood, the part used, is very dense and heavy, of a dark, greenish-brown color, rarely more than 8 inches in diameter; the stem itself seldom reaches 18 inches in diameter, and grows to the height of about 30 ft. The wood is much valued for making the wheels of pulleys and other small articles in which hardness and toughness are required; large quantities are consumed in making the sheaves (see Pulley) of ships' blocks. Besides these uses, the wood, reduced to fine shavings or raspings, the bark, also a greenish resin which exudes from the stem, are much used in medicine, being regarded as having powerful anti-syphilitic and anti-rheumatic properties: see GUAIACUM.

LIGNY, lēn-yē': village in Belgium, province of Namur, about 10 m. n.e. of Charleroi, famous for the battle between the French under Napoleon, and the Prussians under Blücher, 1815, June 16, the same day on which the French under Marshal Ney, were engaged with the British under Wellington, at Quatre-Bras. Napoleon had formed a plan for overpowering his antagonists in detail ere they could concentrate their forces; and contrary to the expectations both of Wellington and of Blücher, began by assailing the Prussians. battle took place in the afternoon. The possession of the villages of L. and St. Amand was hotly contested; but the Prussians were at last compelled to give way. The Prussians lost in this battle 12,000 men and 21 canon; the French 7,000 men. A mistake prevented a corps of the French army, under Erlon, from taking the part assigned to it in the battle, and led to Ney's encountering the Belgians and British at Quatre-Bras (q.v.), instead of uniting his forces with those engaged against the Prussians at Ligny.

LIGULATE, a. $lig'\bar{u}-l\bar{a}t$, or Lig'ulated, a. $-l\bar{a}-t\bar{e}d$ [L. $lig\bar{u}la$, a strap—from lingua, a tongue]: like a bandage or strap; in bot., denoting a corolla of one petal split on one side, and spread out in the form of a tongue or strap, toothed at the extremity; a form of corolla very common in the Composite, appearing in all the florets of some, as the dandelion, and in the florets of only the ray of others, as the daisy and aster: the term, however, is of general application. Ligule, $lig'\bar{u}l$, a tie; in grasses, a flat outgrowth from the leaf where the lamina or blade joins the sheath; also Lig'ula. See Grass.

LIGUORIANS-LI HUNG-CHANG.

LIGUORIANS, lig-ū-ō'ri-anz, called also Redemp-TORISTS: congregation of missionary priests founded by Liguori 1732, and approved by Pope Benedict XIV. 1759. Their object is the religious instruction of the people and the reform of public morality, by periodically visiting, preaching, and hearing confessions, with the consent and under the direction of the parish clergy. Their instructions are ordered to be of the plainest and most simple character, and their ministrations are entirely without pomp or ceremonial. The congregation was founded originally in Naples, but it extended to Germany and Switzerland. In the Austrian provinces they had several houses, and were by some represented as establishments of the suppressed Jesuits under another name; but the constitution and the objects of the two orders were entirely different. Since the Restoration, and especially since the revolution of 1830, the L. have effected an entrance into France, and several houses of the congregation have been founded in England, Ireland, and America; but their place is in great measure occupied by the more active congregation of the Lazarist or Vincentian Fathers, whose objects are substantially the same, and who are much more widely spread. See Paul, VINCENT DE: VINCENTIAN CONGREGATION.

LIGURE, n. *lǐg'ūr* or *lī'gūr* [Gr. *ligu'rĭŏn*, a species of amber]: a precious stone mentioned in Exodus xxviii. 19—supposed by some to be the jacinth or hyacinth.

LIGURIAN REPUB'LIC, *li-gū'ri-an*: the name given to the republic of Genoa 1797, when, in consequence of the conquests of Bonaparte in Italy, it was obliged to exchange its aristocratic for a democratic constitution: see Genoa. The name was chosen because the Genoese territory formed the principal part of ancient Liguria, which in the time of Augustus extended from the Ligurian Sea to the Po in the n., and from the Macra in the e. to the Varus in the w. Long previously, however, Liguria had been a much larger territory stretching far into Gaul—forming indeed the nucleus of the Roman province of Gaul. The Ligurians became subject to Rome about B.C. 125.

LIGURITE, n. līg'ū-rīt [from Ligu'rĭā, in Italy, where found]: a variety of sphene, a mineral of an applegreen color, considered superior as a gem to chrysolite in color, hardness, and transparency.

LI HUNG-CHANG, lē hûng-châng: statesman: b. Ho-Fei-Shienn, province of Ann-Houei, China, 1823, Feb. 16. He was educated in the Han-Sin College, Peking; held several civil and military offices; was appointed gov. of the province of Thiang-Sin 1862; aided in suppressing the Taeping insurrection 1863-4; became viceroy of the two Thiang provinces 1865; minister-plenipotentiary 1866; vicerey of Hong-Kuang 1867; grand chancellor 1868; was despoiled of his titles after the Tien-Tsin massacre 1870; restored to imperial favor and made grand chancellor 1872; and was subsequently appointed gov.-gen. of Pi-Chih-Li

LIKE-LIKEN.

and commander-in-chief of the Chinese army. In 1877 he foresaw the need of a formidable navy for China, and bought 4 ironclads built in England; from this the Chinese navy took its start. In 1888 he began to apply himself to the enterprise of railroad building in his own country, and the practical wisdom with which he proceeded soon enlisted sufficient capital to carry out his plans. About the same time joint-stock companies were organized, through the influence of L., for various industrial enterprises, such as silk, cotton, woolen, glass, and iron manufactures; and under his direction Chinese capitalists studied and practiced the methods of western finance as applied to industry. In 1894 he used his efforts to avert war with Japan over Korean relations, but his advice was not heeded, until China, reduced to dire extremity by the war, turned as usual to him and sent him to make a peace, which delicate and dangerous mission he executed with tact and success. In recognition of his services in this instance the emperor reinstated him in offices and dignities of which he had been deprived. L. royally entertained Gen. Grant when the latter made his tour of the world, and in 1896 he himself made a tour through Europe and America, and was received with distinguished honors by the peoples and their governments. He died 1901, Nov. 7.

LIKE, a. līk from the terminations, Goth. leiks; Icel. likr; Dan. lig; Gr. likos; L. lis; Ger. lich, used to indicate the nature, form, or appearance of a thing: AS. gelic; Ger. gleich, like]: similar; resembling; equal; of like extent; likely; in a state that gives probable expectations: N. some person or thing resembling another: AD. in the same manner as; in such a manner as befits; probably. Likeable, a. $l\bar{l}k'\bar{a}$ -bl, that can be liked; pleasing to, from manners and disposition. LIKELY, a. līk'lī, probable; that may be thought more reasonable than the contrary; suitable; such as may be liked; pleasing; promising: Ap. probably. LIKE'LINESS, n. -nes, or Like'lihood, n. -hûd, probability; appearance of truth. Likeness, n. līk'nes, resemblance; a portrait; one who resembles another; a copy; form. Like-minded, of the same mind. HAD LIKE, had nearly; come little short of .- Syn. of 'likeness': similarity; similitude; parallel; effigy; representation.

LIKE, v. līk [Norw. lika; Lap. likot, to be to one's taste: Goth. leikan, to please: mid. H.Ger. lichen, to be like: AS. gelician, to please, to delight]: to be pleased with; to approve; to choose; in OE., to liken; to please; to be pleased. LI'KING, imp. being pleased with: ADJ. in OE., plump: N. inclination; preference; desire; delight in; in OE., good state of body; plumpness. LIKED, pp. līkt. LIKES AND DISLIKES, feelings of attachment and aversion.

LIKEN, v. $l\bar{\imath}k'n$ [Sw. likna, to resemble, to liken: Eng. like, similar (see Like 1)]: to consider as similar; to compare; to represent as having resemblance. Liken-Ing, imp. $l\bar{\imath}k'n$ - $\bar{\imath}ng$. Likened, pp. $l\bar{\imath}k'nd$.

LIGUORI.

LIGUORI, lē-gō-ō'rē or lē-gwō'rē, Alfonzo Maria pe': Saint and Doctor of the Rom. Cath. Church, an l founder of the order of Liguorians or Redemptorists: 1696, Sep. 27—1787, Aug. 1; b. Naples, of noble family. He entered the profession of law, which he sudden J relinquished to devote himself to a religious life. received priest's orders 1725; and 1732, with 12 companions, founded the association called by his name: see LIGUORIANS. In 1762, having some years before refused the archbishopric of Palermo, he was appointed bp. of the small diocese Sant' Agata dei Goti, in the kingdom of Naples, and his life as a bishop is confessed by Prot. as well as Rom. Cath. historians to have been a model of the pastoral character; but feeling the pressure of years, he resigned his see 1775, returned to his order, and lived 12 years longer in the same simple austerity which had characterized his early life. He died at Nocera dei Pagani, and was solemnly canonized 52 years later. is one of the most voluminous and most popular of modern Rom. Cath. theological writers. His works, 70 vols. 8vo., embrace almost every department of theological learning, divinity, casuistry, exegesis, history, canon law, hagiography, asceticism, and even poetry. His correspondence also is voluminous, but is almost entirely on spiritual subjects. The principles of casuistry explained by L. have been received with much favor in the modern Roman schools; his works have been officially sanctioned and commended; and in the Latin Church his moral theology, a modification of the so-called 'probabilistic system' of the age immediately before his own. is largely used in the direction of consciences, being indeed the accredited system: see Probabilism. Exdeed the accredited system: see Probabilism. ceptions have been taken to certain portions of it on the score of morality, whether in reference to the virtue of chastity or to that of justice and of veracity. These objections apply equally to most of the casuists, and have often been the subject of controversy. L.'s Theologia Moralis (8 vols. 8vo.) have been reprinted numberless times, as also most of his ascetic works. The most complete ed. of his works (Italian and Latin) is that of Monza, 70 vols. They have been translated entire into French and German, and in great part into English. Spanish, Polish, and other European languages.

LIKEWISE-LILAC.

LIKEWISE, ad. $l\bar{\imath}k'w\bar{\imath}z$ [like, and wise (see Like 1)]: in like manner; moreover; also.

LILAC, n. lī'lāk [Sp. lilac; Turk, leilag; F. lilas, the lilac: comp. Gael. liath, pale in color]: a flowering shrub; the Syringa vulgāris, or common lilac: Add. of a purple color like the lilac. LILACINE, n. lī'lŭ-sin, a principle in the bark which renders it a febrifuge.—The Lilac is a genus of nat. ord. Oleaceæ, and consisting of shrubs and small trees, with 4-cleft corolla, 2 stamens, and a 2-celled, 2-valvular capsule. The Common Lilac (S. vulgaris) is one of the most common ornamental shrubs cultivated in Europe and N. America. It is a native of n. Persia, and was brought first to Vienna by Busbecq, ambassador of Ferdinand I., to whom is due also the introduction of the tulip into European gardens. From Vienna it soon spread, so that it is now found half wild in the hedges of some parts of Europe. There are many varie-The flowers grow in large conical panicles; are of a bluish 'lilac' color, purple or white, and have a delicious odor. The leaves are a favorite food of canthar-The bitter extract of the unripe capsules has very marked tonic and febrifugal properties. The wood is fine-grained, and used for inlaying, turning, and the making of small articles: a fragrant oil can be obtained from it by distillation. The CHINESE LILAC (S. Chinensis) has larger flowers, but with less powerful odor, and the Persian Lilac (S. Persica) has narrower leaves. Both are often planted in gardens and pleasure-grounds. There are several other species.

LILIACEÆ-LILLÉ.

LILIACEÆ, lĭl-ĭ-ā'sē-ē: natural order of endogenous plants, containing about 1,200 known species; most numerous in warmer parts of the temperate zones. are mostly herbaceous plants, with bulbous or tuberous, sometimes fibrous roots; rarely shrubs or trees. shrubby and arborescent species are mostly tropical. The stem is simple, or branching toward the top, leafless or leafy. The leaves are simple, generally narrow, sometimes cylindrical, sometimes fistular. The flowers are generally large, with 6-cleft or 6-toothed perianth; and grow singly, or in spikes, racemes, umbels, heads, or panicles. The stamens are six, opposite to the segments of the perianth; the pistil has a superior 3-celled, manyseeded ovary, and a single style. The fruit is succulent or capsular; the seeds packed one upon another in two This order contains many of the finest garden, greenhouse, and hothouse flowers, as lilies, tulips, dog's-tooth violet, lily of the valley, tuberose, crown imperial, and other fritillaries, hyacinths, Gloriosa superba; many species useful for food, as garlie, onion, leek, and other species of Allium, asparagus, the Quamash or Biscuit Root (Camassia esculenta) of N. America, the Ti (Dracana terminalis or Cordyline Ti) of the South Seas, etc.; many species valuable in medicine, as squill, aloes, etc.; and some valuable for the fibre which their leaves yield, as New Zealand Flax, and the species of Bowstring Hemp or Sanseviera.—This nat. ord. has been the subject of a number of splendid works, particularly Redoute's Les Liliacées (8 vols. Paris 1802-16).

LILITH, n. lilith [Heb. lilith, properly the nightly one, the name of a female night-spirit that was believed to wander in the deserts and was represented as making its permanent abode in Edom]: according to Talmudic legend, Adam's first wife, who for refractory conduct was transformed into a demon, and had power to injure and destroy infants unprotected by the necessary amulet.

LILLE, lel (formerly L'ISLE, 'the island'; Flemish, Ryssel): important manufacturing town and fortress in n. France, chief town of the dept. of Nord; on the Deule in a level, fertile district, 140 m. n.n.e. of Paris, 62 m. s.e. of Calais. The streets are wide, the squares imposing, and the houses, mostly in the modern style, well The principal buildings and institutions are the Medical School, the Lyccum, the Bourse, and the palace of Richebourg, now the Hôtel-de-Ville, in which is the school of art, with a famous collection of drawings by Raphael, Michael, and other masters. L. was named from the castle around which the town originally arose, and which from its position in the midst of marshes was called Isla. It was founded 1007 by Baldwin, fourth Count of Flanders, and has suffered greatly from frequent sieges. Of these, the most recent, perhaps the most severe, were in 1708 and 92. On the former occasion, during the war of the Spanish Succession, the garrison capitulated to the allies, after a bombardment

LILLIBURLERO-LILLY.

of 120 days; on the latter, the Austrians, after a terrific bombardment, were obliged to raise the siege. L. is an important military centre. It is also the seat of extensive and thriving manufactures. The goods principally manufactured are linen, hosiery, gloves, blankets, lace, Lille (or Lisle) thread, and tulle. The town contains many spinning-mills, bleach-fields, sugar-refineries, distilleries, tan-pits, dye-houses, etc. In the vicinity are numerous oil-mills, porcelain-factories, and glass and pottery works. Pop. (1891) 201,211; (1901) 210.696.

LILLIBURLERO, *līl-lī-bŭ-lē'rō*: Irish word, refrain of an Irish ballad, ascribed to Lord Wharton before the revolution of 1688, which had considerable influence in that outbreak. The word L. with the word Bullen-a-lah are said to have been war-cries of the Irish Rom. Catholics

in the Prot. massacres of 1641.

LILLIPUTIAN, n. lǐl'lǐ-pū'shăn [Lilliput, fabled country described by Swift in Gulliver's Travels, of which the inhabitants are not greater in size than an ordinary man's finger]: a dwarf; any very diminutive person or thing: Adj. very diminutive.

LIL'LY, JOHN: see LYLY.

LILLY, līl'ī, WILLIAM: 1602-1681, June 9; b. Diseworth, Leicestershire: English astrologer. While young, he was employed as book-keeper by a merchant in London, who could not write, and on his employer's death, married his widow, with whom he obtained a fortune of £1,000 sterling. He betook himself to the study of astrology, particularly the Ars Notoria of Cornelius Agrippa, and soon acquired fame as a caster of nativities, and a predictor of future events. In 1634, he is said to have obtained permission from the Dean of Westminster to search for hidden treasure in Westminster Abbey, but was driven from his midnight work by a storm, which he ascribed to hellish powers. From 1644 till his death, he annually issued his Merlinus Anglicus Junior, containing vaticinations, to which much importance was attached by many. In the civil war, he attached himself to the parliamentary party, and was actually sent 1648, with another astrologer, to the camp at Colchester, to encourage the troops, which service he performed so well that he received a pension for it, which, however, he retained only two years. Nevertheless, he made a small fortune by his 'art' during the Commonwealth, and was able to purchase an estate. After the Restoration, he was imprisoned, on the supposition that he was acquainted with the secrets of the republicans; but being set free, he retired to the country. He was again apprehended on suspicion of knowing something of the causes of the great fire of London 1666. He died, 1681, June 9, at his estate at Hersham. L. wrote nearly a score of works on his favorite subject, of no value, except as illustrations of credulity.

IILT, v. lilt [Russ. liôlka, a cradle: Esthon, laul, a song: Ger. lallen, to sing without words: comp. Gael. luailte, speed, haste (see Lull)]: as a prov. Eng. word, to do a thing with dexterity or quickness; in Scot., to sing cheerfully and merrily; to do with spirit and gayety: N. a cheerful air; a lay or song. Lilt'ing, imp. Lilt'ed, pp. -ĕd.

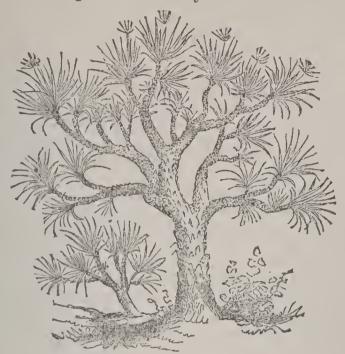
LILY, n. līl'ī [L. lilīum, a lily]: beautiful flowering plant of many species, having a bulbous root. LILIACEOUS, a. līl'ī-ā'shus [F. liliacé—from mid. L. liliācĕus]: pertaining to lilies, or resembling them. LILY-HANDED, having hands white and pure as the lily. LILY-WHITE, white as the petals of a lily. LILY-STONE, and LILY-ENCRINITE, familiar terms for the common encrinite of geologists, from the fanciful resemblance of its stalk and clustered tentacles to the stem and flower of a lily.

LILY: genus of plants of nat. ord. Liliaceæ, containing a number of species much prized for the size and beauty of their flowers. The perianth is bell-shaped, and its segments are often bent back at the extremity. The root is a scaly bulb, the stem herbaccous and simple, often several ft. high, bearing flowers near its summit. —The White Lily (L. candidum), native of the Levant, has been long cultivated in gardens, and much sung by poets. It has large, erect, pure white flowers, as much prized for fragrance as for beauty.—The Orange Lily (L. bulbiferum), native of s. Europe, with large, creet, orangecolored flowers, is a well-known and very showy ornament of flower-gardens.—The Martagon or Turk's Cup Lily (L. Martagon), native of s. Europe, and allied species with verticillate leaves and drooping flowers, also are common in gardens. The Tiger Lily (L. tigrinum) is a native of China, remarkable for the axillary buds on the stem; and some fine species are natives of N. America. as L. superbum, which grows in marshes in the United States, has a stem 6-8 ft. high, and reflexed orange flowers, spotted with black; L. Canadense, etc. Several very fine species have been introduced from Japan, as L. Japonicum, L. speciosum, and L. lancifolium.—The bulbs of L. Pomponium, L. Martagon, and L. Kamtschacense, are roasted and eaten in Siberia. That of L. candidum loses its acridity by drying, roasting, or boiling; when cooked, it is viscid, pulpy, and sugary, and is eaten in parts of the East.—Lilies are propagated generally by offset bulbs. A single scale of the bulb, or even part of a scale, will however suffice to produce a new plant, of which skilful gardeners avail themselves.—The name is often popularly extended to flowers of other genera of the same order, and even of allied orders.

LILY, GIGANTIC (Doryanthes excelsa), of Australia: plant of nat. ord. Amaryllideæ, with flowering stem 10 or 14, sometimes 20 ft. high, bearing at top a cluster of large crimson blossoms. The stem is leafy, but the largest leaves are near the root. This plant is found

LILYBÆUM-LILY OF THE VÁLLEY.

both on the mountains and on the sea-coast of New South Wales. It is of splendid beauty. The fibre of its leaves



Lily-Tree (Doryanthes excelsa).

has been found excellent for ropes and for textile fabrics.

LILYBÆ'UM: see MARSALA.

LILY OF THE VALLEY (Convallaria): genus of plants of nat. ord. Liliacea, having terminal racemes of flowers; a white, bell-shaped, or tubular 6-cleft or 6-toothed perianth; a 3-celled germen, with two ovules in each cell, and a succulent fruit.—The species commonly known as the Lily of the Valley (C. majalis), the Maiblume or Mayflower of the Germans, grows in bushy places and woods in Europe, n. Asia, and N. America,



Lily of the Valley (C. majalis).

and has a leafless scape, with a raceme of small flowers turned to one side. It is a universal favorite, for its

pure and modest beauty, its fragrance, and the early season of its bloom. It is therefore very often cultivated in gardens, and forced to earlier flowering in hothouses. Varieties are in cultivation with red, variegated, and double flowers. The berries, the root, and the flowers have a nauseous, bitter, somewhat acrid taste, and purgative and diuretic effects. The smell of the flowers in large quantity, and in a close apartment, is narcotic. Dried and powdered, they become a sternutatory. The esteemed Eau d'or of the French is distilled from the flowers.—Allied to Lily of the Valley is Solomon's Seal (q.v.).

LIMA, *lī'ma*: city, cap. of Allen co., O.; on Ottawa river, and on the Pittsburgh Fort Wayne and Chicago, Lake Erie and Western, the Cincinnati Hamilton and Dayton, and the Ohio Southern rairoads; 71 m. n. of Dayton, 91 m. s.w. of Sandusky. It has excellent schools, national and private banks, daily and weekly newspapers; and manufactures furniture, railroad equipments, and miners' and edged tools. This city is one of the prominent shipping-points for petroleum. Pop. (1870) 4,500; (1880) 7,569; (1890) 15,981; (1900) 21,723.

LIMA, lema: capital of the republic of Peru, and of the dept. and province of L.; on the river Rimac (of whose name its own is a corruption), about 6 m. from its mouth and from its port on the Pacific, Callao, with which it is connected by railway; lat. 12° 2′ s., long. 77° 7' w. The climate is moist but not unhealthful; the rainfall is very little, and the temperature not excessive in its variations, having for its mean through the year about 73° F. Summer begins in Dec., winter in June. The city is regularly laid out, with wide streets, and houses spacious though not lofty, and built usually around an open court or yard. The principal buildings are the cathedral, of stone with broad façade and two lofty towers, the archbishop's palace, government house, and municipal office. There are also 67 churches and chapels, and many monasteries and convents. The largest church is that of San Pedro (1598) with 17 altars. The university, built 1576, is the oldest in America. There are more than 70 schools, a public library of more than 40,000 vols., many charitable institutions, and an amphitheatre for bullfights accommodating 9,000 spectators. There is a marble statue of Columbus unveiling America, and a famous bronze equestrian statue of Simon Bolivar, 11 tons in weight. L. has few industries, but it is a great trading centre: the imports and exports together exceed \$25,000,-000, annually. Imports are cottons, woolens, silks, hardware, wines, and brandy; exports, silver, copper, bark, soap, vicuna wool, chinchilla skins, nitre, sugar, etc. L. was founded 1535 by Pizarro. It has had vicissitudes of conflagration, capture in war, and repeated earthquake. By one earthquake, 1746, 5,000 of the inhabitants perished.—Pop. department (1868) 121,362; (1896) 298,-106; city over 100,000.

LI'MA BEAN (Phaseolus lunatus): the most popular bean in cultivation. The seeds are large and flat and of a dull white shade: It is used for the table in either a green or ripe state. The plant is tender and does not mature seed in the extreme northern portions of the United States. There are several varieties, some of which are smaller and mature earlier than the Large White, which still remains the standard sort with market gardeners. Efforts are being made, with moderately encouraging results, by seedsmen to secure a dwarf variety which shall possess the good qualities of the large kind and be free from its objectionable features. The L. B. requires rich, deep soil. Planting must not be done until the ground is dry and danger of frost is over. Poles five to eight ft. in length are to be firmly set, and the earth drawn around them in the form of small mounds in which to place the seeds. Four or five seeds should be planted, with the eyes downward, around each pole. When they are well started, they should be thinned The runners are to be twined around the to two plants. poles in the opposite direction from the movement of the sun. Wire netting is used by some gardeners instead of poles, and is said to have some advantages. Frequent hoeing is desirable to promote the growth of the plants, as well as to keep the ground free from weeds.

LIMACIOUS, a. $l\bar{\imath}$ - $m\bar{a}'$ shŭs [L. limax or $lim\bar{a}cem$, a slug, a snail: F. limace]: of or resembling the slug or naked snail. Limax, n. $l\bar{\imath}'m\bar{a}ks$, a genus of air-breathing mollusks without shells; the slug or snail (see Slug). Limac'idæ: see Slug.

LIMA WOOD, $l\bar{e}'m\hat{a}$ $w\hat{u}d$: name of the dye-wood called also Pernambuco Wood, Nicaragua Wood, and Peach Wood, the heart-wood of Casalpinia echinata: see Brazil Wood. It is extensively used for dyeing red and peachcolor.

LIMB, n. līm [AS. lim, a limb: Icel. limr, a branch, a limb: Dan. lime, a twig: comp. Gael. lamh, an arm or hand]: the part of an animal jointed, as it were, to the body, as an arm or a leg; a large branch of a tree; in bot., the blade of the leaf; the broad part of a sepal or petal: V. to supply with limbs; to dismember. Limb'ing, imp. Limbed, pp. līmd: Adj. having limbs. Limb'less, a. -lēs, without limbs. Limb-meal, līm'mēl, in pieces; piecemeal.

LIMB, n. lim [L. limbus, a border that surrounds anything: It. lembo, skirt, border]: the border or edge of the disk of a heavenly body, particularly of the sun or moon; the edge of a graduated circle in an instrument for measuring angles: a theodolite has two limbs—one for horizontal, one for vertical angles (see Theodolite): spaces or degrees on a limb are sub-divided by a Vernier (q.v.). The term limb is often applied also to the graduated staff of a levelling-rod.

LIMBAT, n. lim'băt: a name in the island of Cyprus applied to a cooling wind, blowing from S A.M. till midday or later; the local sea-breeze.

LIMBEC, n. lim'bĕk: OE. for Alembic, which see.

LIMBER, n. lim'ber [Icel. limar, boughs; lim, foliage: OF. liamen, a tie, a packet—from L. ligāmen, a bandage, a tie: F. limon, a shaft]: half the field-equipage of a cannon or howitzer. The one half consists of the carriage itself, with the gun; while the L., a two-wheeled carriage, fitted with boxes for the field-ammunition of the piece, and having shafts to which the horses are harnessed, forms the remainder. At the back-part, the L. has a strong hook, to which, on the march, is attached the foot of the gun-earriage by a ring at h (see figure, GUN-CARRIAGE). This constitutes at once a four-wheeled frame, which, while easier for transport than a gun on two wheels only, has the advantage of keeping together the gun and its ammunition. In marching, the gun points to the rear; but in coming to action, the artillerymen, by a rapid evolution, wheel round, so that the gun points to the front. It is then unlimbered, or unbooked, and the L. eonveyed far enough to the rear to be out of the way of the men working the piece. To limber up again, and retreat or pursue, is the work of a few moments.—Limber denotes also the rollers laid under a boat when it is drawn up on the beach: and in a ship, holes in the floor leading to the pump. Limber, v. um'ber, to attach a cannon to the limber. Lim'Bering, imp. LIMBERED, pp. lim'berd. To UNLIMBER, to detach from the limber. Unlim'bering, imp. detaching or unhooking the gun when brought into action. LIMBERING UP, attaching the gun to the limber. Note.—LIMMERS is the older spelling of Limbers, and b is intrusive.

LIMBER, a. lim'ber [Swiss, lampen, to hang loose: Icel. limpiaz, to faint, to become slack (see Limp 2)]: not baving strength to stand stiff; flexible; supple; pliant; easily bent.

LIMBO, n. lim'bō [L. limbus, a hem or edge: It. lembo, the skirt of a garment, the hem or border; limbo, limbo]: see Limbus. In Limbo, in prison; under restraint.

LIMBURG, lim'burch, F. lang-bor': old province of Belgium, which, after having formed part of Belgium, France, Holland, and Austria, was, 1839, divided between Belgium and Holland.—Belgium Limburg, or Limbourg, in the n.e. of the kingdom, is separated from Holland by the Meuse up to lat. 51° 9′ n., thence by a line running e.n.e. to the n. boundary of the kingdom: 928 Eng. sq. miles; cap. Hasselt (q.v.). The surface of the province is flat, and a large portion is occupied by barren heath; but in the s. and centre there is good arable land. There is excellent pasturage along the banks of the Meuse, and large herds of eattle and swine are here reargd. The manufactures include soap, salt, pottery,

LIMBURG—LIMBUS.

paper, tobacco, straw-hats, beet-sugar, etc. Pop. (1882) 213,770; (1894) 229,184; (1900) 240,796.

LIM'BURG: province of Holland, formerly also a duchy in the Germanic Confederation; in the s.e. corner of the kingdom, being contiguous to the Belgian province of the same name; 848 Eng. sq. miles; cap. Maestricht (q.v.). Its surface is generally level, and the soil is poor, a great part of it consisting of moors and marshes. However, in the valleys of the Meuse and its chief tributaries, excellent crops of grain, hemp, flax, oil-seeds, etc., are raised, and cattle and sheep reared. There are many manufactories of gin, tobacco, soap, leather, paper, and glass. Pop. (1883) 246,298; (1888) 260,161; (1901) 292,072.

LIMBUS, n. lim'bus [L. limbus, a border or edge]: in bot., the border or expanded part of a petal or flower; called also the Limb. Limbus in Rom. Cath. theology is the name assigned to that place or condition of departed souls (spirits) in which those are detained who have not offended by any personal act of their own, but, nevertheless, as being stained with original sin, are not admitted to the divine vision. They distinguish it into the Limbus Patrum and the Limbus Infantium. By the former name they understand the place of those just persons who died before the coming of the Redeemer and were believed to be liberated by his descent into Hades, and of whom it is said (I Peter iii. 19), that he preached to those spirits that were in prison. By Limbus Infantium is meant the place or state of the souls of those infants who die without baptism, including in the category idiots, cretins, and the like: see Hell: Hades. Regarding the nature of both these places of detention, great variety of opinion prevails in Rom. Cath. schools, and almost nothing has been authoritatively decided by the church: the Greek fathers usually inclined to a cheerful, the Latin fathers to a severe view. See Wetser's Kirchen-Lexicon, art. 'Höllenfahrt Christi.'

LIME, n. \$\lambda{m}\$ [Ger. \$leim;\$ Dut. \$lijm;\$ Icel. \$lim,\$ glue, any viscous substance which joins bodies together: L. \$limus,\$ slime, mud: Dut. \$leem,\$ loam,\$ clay]: the white caustic earth used, when mixed with water, and most commonly with sand, as mortar or cement, obtained by burning limestone, chalk, marble, etc. (see Lime, below: also Slaked Lime, below): V. to cover or manure with lime; to cement. \$Li'ming,\$ imp.: N. a dressing with lime. Limed, pp. \$limd:\$ Adj. dressed with lime. \$Limy,\$ a. \$li'mi,\$ containing lime; glutinous. \$Lim'iness,\$ n. \$-n\tilde{e}s\$, state of being limy. \$Lime-burner,\$ an attendant on a lime-kiln;\$ one who prepares the limestone for being slaked for mortar. \$Lime-kiln,\$ \$-k\til,\$ a place for burning limestone. \$Lime-light,\$ an intensely brilliant light produced by a jet of oxygen and a jet of hydrogen gas playing together upon a cylinder of lime; the oxyhydrogen light. \$Lime-water, water containing carbonate of lime in solution. \$Limestone\$ (see below). Quicklime, calcined or burned limestone; the oxide of the metal calcium. \$Laked Lime, lime that has been thoroughly slaked or saturated with water; hydrate of lime. \$Bird-lime: see Lime 4.

LIME: the oxide of the metal Calcium (q.v.), and known in chemistry as one of the alkaline earths. Its symbol is CaO, its molecular weight is 56, and its specific gravity is 3.18. In a state of purity, it is a white caustic powder, with alkaline reaction, and so infusible as to resist even the heat of the oxyhydrogen jet: see Drum-MOND LIGHT. It is obtained by heating pure carbonate of lime (e.g., Carrara marble or Iceland spar) to full redness, when the carbonic acid is expelled, and lime is left. Commercial L. is obtained by burning common limestone in a kiln in contact with the fuel, which by its reducing action favors the separation of carbon dioxide. It is usually very far from pure: this compound (CaO) is known as quicklime, or, from the ordinary method of obtaining it, as burned lime, to distinguish it from the hydrate of lime or slaked lime, which is represented by the formula CaH₂O₂. On pouring water on quicklime, there is an augmentation of bulk, and the two enter into combination; and if the proportion of water be not too great, a light, white, dry powder is formed, the hydrate mentioned above, and a great heat is evolved. On exposing the hydrate to a red heat, the water is expelled, and quicklime is left.

If quicklime, instead of being treated with water, is simply exposed to the air, it slowly attracts both aqueous vapor and carbonic acid, and becomes what is termed air-slaked, the resulting compound in this case being a powder which is a mixture of carbonate and hydrate of lime.

L is about twice as soluble in cold as in boiling water, but even cold water only takes up about $\frac{1}{78}$ of its weight of lime. The solution is known as lime-water, and is employed both as a medicine and as a test for car-

bonic acid, which instantly renders it turbid in consequence of the carbonate of L. that is formed being more insoluble even than lime itself. It must, of course, be kept carefully guarded from the atmosphere, the carbonic acid of which would rapidly affect it. If in the preparation of slaked L. considerably more water is used than is necessary to form the hydrate, a white semifluid matter is produced, which is termed milk of lime. On allowing it to stand, there is a decomposition of hydrate of L., above which is lime-water.

For the use of L. in preparation of mortars and coments, see the titles referring to these subjects. L. is used largely also as a manure (see below), and in the purification of coal-gas, in the preparation of hides for tanning, for various laboratory processes (from its power of attracting water), etc. Its medicinal uses are noticed be-

low.

The following are the most important of the salts of lime. Sulphate of lime (CaSO₄) occurs free from water in the mineral anhydrite, but is much more alundant in combination with two equivalents of water in selenite, and in the different varieties of gypsum and al-

abaster: see Gypsum.

Carbonate of lime (CaCO₃) is abundantly present in both the inorganic and organic kingdoms. In the inorganic kingdom, it occurs in a crystalline form in Iceland spar, Aragonite, and marble—in which it is found in minute granular crystals—while in the amorphous condition it forms the different varieties of limestone, chalk, It is always present in the ashes of plants, but here it is, at all events, in part the result of the combustion of citrates, acetates, malates, etc., of lime. It is the main constituent of the shells of crustaceans and mollusks, and occurs in considerable quantity in the bones of man and other vertebrates. Carbonate of L., held in solution by free carbonic acid, is present also in most spring and river waters, and in sea-water. Stalactites, stalagmites, tufa, and travertine all are composed of this salt, deposited from calcareous waters. Certain forms of carbonate of L.—the Portland and other oolites. some of the magnesian limestones, etc.—are of extreme value for building purposes, and the various uses of the finer Marbles (q.v.) are too well known to require com-

There is a combination of L. with an organic acid, viz., oxalate of calcium, which is of great importance in pathology as a frequent constituent of urinary calculi and sediments; for a description of it, see Oxalic Acid.

The soluble salts of L. (or, accurately speaking, of calcium) give no precipitate with ammonia, but yield a white precipitate (of carbonate of calcium) with carbonate of potassium or of sodium. These reactions are, however, common to the salts of barium, stroutium, and calcium. Solution of sulphate of calcium produces no marked effect when added to a salt of calcium, but throws down a white

sulphate with the other salts. The most delicate test for L. is oxalate of ammonium, which, even in very dilute neutral or alkaline solutions, throws down a white precip-

itate of oxalate of calcium.

There are several compounds of phosphoric acid and L., of which the most important is the basic phosphate of calcium, tricalcic phosphate, sometimes termed bone phosphate, from its being the chief ingredient of bones. The basic phosphate is represented by the formula Ca_3 (PO₄)₂, and occurs not only in bones, but also in the minerals apatite and phosphorite, and in the rounded nodules termed coprolites, found in the Norfolk eng. It forms $\frac{4}{5}$ of the ash of well-burned bone, the remaining $\frac{1}{5}$ being carbonate of lime. This ash is known as bone-earth, and is employed as a manure and in the preparation of phosphorus, etc.

For the substance commonly designated chloride of

lime, see Bleaching Powder.

Line as Manure.—This mineral substance has been used for many centuries as a means of increasing the fertility of land. All crops require a certain amount, as is found by analyzing the ash which remains after combustion, It is sometimes supplied, without previous preparation, in the form of marl and chalk, but in most cases is first calcined and reduced to a fine powder by slaking with water. The quantity of calcined L. applied varies from three to eight tons to the acre. The smaller quantity may be sufficient for light land containing little vegetable matter, while the larger may be required for strong land, or for land holding much organic matter in an inert state. The large quantity of L. applied shows that its manurial effect is due more to its producing a certain chemical effect on the land, than to its affording nutriment to the crops. L. promotes the decomposition of all kinds of vegetable matter in the soil, and, further, it corrects any acidity in the organic matter, and thus destroys those weeds which are favored by such a condition of the soil. It assists in the dccomposition of certain salts whose bases form the food of plants, and in this way it may be said to digest or pre-pare their food. On certain kinds of land, the finer grasses do not thrive until the land has been limed, and in these cases its use becomes all-important. L. is the only cure, too, that can be relied on for 'finger-andtoe' in turnips.

Lime-Compounds in Materia Medica.—Quicklime, in association with potash, either as the Potassa cum calce, or as Vienna Paste, is occasionally used as a caustic. Limewater, mixed with an equal quantity or an excess of milk, is one of the best remedies for the vomiting dependent on irritability of the stomach. From half an ounce to two or three ounces may be thus taken three or four times a day. For its use as a constituent of Carron oil in burns, see Liniments. Chalk, or carbonate of lime.

when freed from the impurities with which it is often associated, is used as a dusting-powder in moist excoriations, ulcers, etc.; and in the form of chalk mixture and compound powder of chalk, is a popular remedy in various forms of diarrhea. A mixture of an ounce of precipitated carbonate of lime and a quarter of an ounce of finely powdered camphor, is sold as Camphorated Cretaceous Tooth-powder.

LIME, n. līm [F. līme, a lime: Pers. límú, a citron, a lemon], (Citrus acida): fruit similar to the Lemon (q.v.), but much smaller, being only about 11 inches in diameter. and almost globular, with a thin rind, and an extremely acid juice. It is of the ord. Aurantiacew, and is regarded by many botanists as a variety of the same species with the Citron and Lemon. The plant does not attain the magnitude of a tree, but is a shrub of about eight ft. in height, with a crooked trunk, and many spreading prickly branches. It is a native of India and China, but has long been cultivated in the W. Indies, s. Europe, etc. In the W. Indies, it is planted both for its fruit and for hedges. The fruit is used for the same purposes as the lemon; but its acid is by many reckoned more agreeable. Lime-juice is used like lemon-juice for the manufacture of citric acid, and it is itself used as a beverage, and is valued as an anti-scorbutic.—The Sweet Lime (C. Limetta of Risso), cultivated in s. Europe, appears to be a mere variety, probably the result of cultivation, with a sub-acid pulp.

LIME, n. $l\bar{\imath}m$, in BIRD-LIME [Ger. leim, glue (see LIME 1)]: the viscous substance prepared from the bark of the holly, misletoe, and others, also from wheat-flour in the form of gluten, used to entangle and catch small birds who may light upon the branches that have been smeared with it: V. to smear with lime; to entangle; to ensnare. LI'MING, imp. LIMED, pp. $l\bar{\imath}md$: ADJ. spread to ensnare as with bird-lime. LIME-TWIG, a twig covered with bird-lime.

LIME, n. $l\bar{\imath}m$, or Lime-tree, $l\bar{\imath}m$ -tre, or Lin'den [lime is a corruption of linden: AS. and Dan. lind (see Linden).—Said also to be from lime, viscous substance, referring to the glutinous character of its young shoots; some refer it to a corruption of line-tree, from the fact of a kind of lines or cordage being obtained from the bast or bark], (Tilia): genus of trees of nat. ord. Tiliaceæ, natives of Europe, n. Asia, and N. America. The species are very similar; graceful, umbrageous trees; with deciduous, heart-shaped, serrated leaves, and cymes or panicles of rather small yellowish flowers; each cyme or panicle accompanied with a large, oblong, yellowish, membranous bractea, with netted veins, the lower part of which adheres to the flower-stalk. The wood is light and soft, but tough, durable, and particularly suitable for carved work. It is much used by turners, and for making pill-boxes. The charcoal made of it is often

used for tooth-powder, for medicinal purposes, for crayons, and for the manufacture of gunpowder. For the use of the fibrous inner bark for making ropes, mats, and other plaited work, see BAST. It is used also as a healing application to wounds and sores, being very mucilaginous, and abounding in a bland sap. The leaves are in some countries used as food for cattle, but cows fed on them produce bad butter. The flowers have an agreeable odor, and abound in honey, much sought after by bees. The celebrated Kowno Honey, much valued for medicinal use and for making liqueurs, is the produce of great L. forests near Kowno, in Lithuania. The infusion and distilled water of the dried flowers are gently sudorific and antispasmodic. The former is in France a popular remedy for catarrhs. The seeds abound in a fixed sweet oil.—The European L., or Linden (T. Europæa), often attains a large size, particularly in rich alluvial soils. Some botanists distinguish a small-leaved kind (T. parvifolia or microphylla) and a large-leaved (T. grandifolia) as different species; others regard them



Lime-Tree (T. Europæa).

as mere varieties. The Hooded or Capuchin L. is an interesting monstrous variety. The L.-tree is often planted for shade in towns; and the principal street of Berlin is called *Unter den Linden*, from the rows of L.-trees which line it. The L. is a very doubtful native of Britain, although indigenous on the continent from Scandinavia to the Mediterranean. In Britain, the L.-tree is generally propagated by layers.—The American L. (T. Americana, or T. glabra), often called Basswoon in the United States, has larger leaves than the European species. It abounds on the shores of Lakes Erie and Ontario. Other species take its place in more western and more southern regions

LIME-HOUND—LIMERICK.

LIME-HOUND, n. $l\bar{\imath}m$ -hownd [F. limier, a blood-hound or lime-hound—from OF. liem, a leash—from L. $lig\bar{a}$ -men, a band or tie]: in OE., a mongrel dog—so named from the leash by which it was held; a greyhound; others say, a blood-hound; also called a LIMER, n. $l\bar{\imath}'m\dot{e}r$.

LIMERICK, lim'er-ik: maritime county of the province of Munster, Ireland, separated by the Shannon on the n. from Clare, and bounded e. by Tipperary, s. by Cork, and w. by Kerry. Its extreme length is 35 m., breadth 54 m., 1.064 sq. m.. or 680,842 acres. Population (1881-180,632, of whom 168,000 were Roman Catholics; (1901) The surface of L. is an undulating plain, which forms part of the central carboniferous limestone plain of Ireland. A mountainous district on the w. belongs to the great coal-tract of Munster, but the coal is of inferior quality, and is used chiefly for burning of lime. Within a short distance of the city of L. is a quarry which produces a reddish-brown marble of fine quality, as well as a black marble of inferior value. More than one of the districts contains iron, copper, and lead ores; but at present, no mining operations are carried on. The soil in general is very fertile, especially the district called the Goldon Vale, more than 150,000 acres; as also a portion of the left bank of the Shannon below Limerick. Of the entire acreage of the county, 526,876 acres are arable, and 121,101 unsuited to cultivation. In general, the soil is fitted equally for tillage and for pasture. In 1880, 176,774 acres were under crops of various kinds, only 220 being reported fallow. In the same year, the number of cattle was 200,252; sheep, 49,940; pigs, 41,319. The national schools (1880) had 37,238 pupils, of whom 36,456 were Rom. Catholics.

The principal towns of L. are the city of L., Newcastle, and Rathkeale. Of secondary rivers, the Deel and the Maigue are most important. The great highway of water-communication is the Shannon itself, the navigation of which has been much improved, and in which the harbor of Foynes promises to form the nucleus of an extended foreign trade. L. communicates by railway with Dublin, Waterford, Cork, and Ennis. The population is chiefly agricultural, hardly any manufactures existing outside the city. L. anciently formed part of the territory of Thomond, the principality of the O'Briens. After the English invasion, it fell, through many vicissitudes, in great part to the Desmond Fitz-geralds—the confiscated estates of the last earl in L. containing no fewer than 96,165 acres. On the forfeiturcs after 1641 and 90, it was parcelled out to new proprietors. L. is more than usually rich in antiquities, both ecclesiastical and civil, of the Celtic as well as of the Anglo-Norman period. There were at one time nearly 40 religious foundations of the O'Briens alone, and the ruins of about 100 castles are still seen. The ecclesiastical remains of Adare are exceedingly interest-

and the same of th

LIMERICK.

ing, two of the ancient churches having been restored, one as the Prot., the other as the Rom. Cath. parish church. Two other monastic ruins, in very good preservation, form a group of ecclesiastical remains hardly surpassed, in number and picturesqueness, even in the most favored districts of England.

LIM'ERICK: city, parliamentary and municipal borough, capital of the county L.; on the river Shannon, 120 m. w.s.w. from Dublin, with which it is connected by the great Southern and Western railway. Pop.(1851) 53,448; 41861) 44.626; (1871) 39,353, of whom 18,022 were males; (1901) 37,155, more than 90 per cent. Rom. Catholics. L. occupies both sides of the Shannon, together with a tract called King's Island, on a bifurcation of the river, and is divided into the English Town, the oldest part of the city (connected with the extensive suburb called Thomond Gate, on the Clare side of the Shannon), and the Irish Town, which, within the present c., has extended on the s. bank of the river into what is now the best part of L., called the New Town, or Newtown Pery, one of the handsomest towns in Ireland. nas great antiquity. From its position on the Shannon, it was long an object of desire to the Danes, who occupied it in the middle of the 9th c., and held possession till reduced to a tributary condition by Brian Boroimhe, in the end of the 10th c. It was early occupied by the English, and 1210, King John visited and fortified it. It was assaulted and partially burned 1314 by Edward Bruce. Its later history is still more stirring. It was occupied by the Rom. Cath. party 1641, but surrendered to Ireton 1651. At the revolution, it was the last stronghold of King James. Having been unsuccessfully besteged by William after the victory of the Boyne, it was regularly invested 1691 by Gen. Ginkel, and after a vigorous and brilliant defense of several weeks, an armistice was proposed, which led to the well-known 'Treaty of Limerick,' the alleged violation of which has been the subject of frequent and acrimonious controversy between political parties in Ireland. The so-called 'Treaty Stone' still marks the spot, near Thomond Bridge, at the entrance of the suburb of Thomond Gate, where this treaty was signed. The modern city of L. is more tasteful in its general character, and possesses more appliances of commercial enterprise and social culture than most towns of Ireland. Its public buildings, especially the new Rom. Cath. cathedral, and church of the Redemptorist order, are imposing, and in excellent taste. Its charitable and religious establishments are munificent for a provincial town. It possesses several national schools, as well as many other educational institutions. The Shannon at L. is a noble river, navigable for ships of large burden. The docks and quays are very extensive and commodious; and the export trade is conducted with enterprise. The Wellesley Bridge, over the harcor, cost £85,000. The inland navigation is through a

LIMESTONE.

canal to Killaloe, where it enters Lough Derg, thence by the upper Shannon to Athlone, and by the Grand Canal, which issues from the Shannon at Shannon Harbor, to Dublin. The manufactures of L. are not very extensive, but some of them have an imperial reputation—e.g., the manufactures of lace, gloves, and fish-hooks. There are several iron-foundries, flour-mills, breweries, distieries, and tanneries, and of late, the ship-building trade has been extended. In 1880, 666 vessels, of 171,886 tons, entered, and 379, of 80,162 tons, cleared the port.

LIMESTONE: popular as well as technical name for all rocks composed in whole or large extent, of carbonate of lime. Few minerals are so extensively distributed in nature as this; and in some form or other, limestone rocks occur in every geological epoch. Carbonate of lime is nearly insoluble in pure water, but is rendered easily soluble by the presence of carbonic acid gas, which occurs in a variable quantity in all natural waters, for it is absorbed by water in its passage through the air as well as through the earth. Carbonate of lime in solution is consequently found in all rivers, lakes, and seas. In evaporation, water and carbonic acid gas are given off, but the carbonate of lime remains uninfluenced, bacoming gradually concentrated, until it has supersaturated the water, when a precipitation takes place. In this way are formed the stalactites which hang iciclelike from the roofs of limestone caverns, and the stalagmites which rise as columns from their floors. Travertine (Tiber-stone), or calcarcous tufa, is similarly formed in running streams, lakes and springs, by the deposition of the carbonate of lime on the beds or sides, where it encrusts and binds together shells, fragments of wood, leaves, stones, etc So also birds' nests, twigs, and other objects become coated with lime in the so-called petrifying wells, as that of Knaresborough. From the same cause, pipes conveying water from boilers and mines often become choked up, and the tea-kettle becomes lined with 'fur.'

Though water is thus the great store-house of carbonate of lime, very little of the substance is fixed by precipitation; for in the ocean, evaporation does not take place to such an extent as to permit it to deposit, besides, there is five times the quantity of free carbonic acid gas in the water of the sea that is required to keep the carbonate of lime in it in solution. Immense quantities of lime are nevertheless being abstracted from the sea, to form the hard portions of the numerous animals which inhabit it. Crustacea, mollusca, zoophytes, and foraminifera are ever busy separating the little particles of carbonate of lime from the water, and solidifying them, and so supplying the materials for forming solid rock. It has been found that a large portion of the bed of the Atlantic between Europe and N. America is covered with a light-colored ooze, composed chiefly of the perfect or broken skeletons of foraminifera, forming a

LIMFIORD-LIMITATION.

substance, when dried, which, in appearance and structure, closely resembles chalk. In tropical regions, corals are building reefs of enormous magnitude, corresponding in structure to many rocks in the carboniferous and other formations. The rocks thus organically formed do not always occur as they were originally deposited; denudation has sometimes broken them up to re-deposit them as a calcareous sediment. Great changes, too, may have taken place through metamorphic action in the texture of the rock, some limestones being hard, others soft, some compact, concretionary, or crystalline. The chief varieties of L. are: Chalk (q.v.); Oolite,

The chief varieties of L. are: Chalk (q.v.); Oolite, (q.v.); Compact L., a hard, smooth, fine-grained rock, generally of bluish-gray color; Crystalline L., a rock which, from metamorphic action, has become granular; fine-grained white varieties, resembling loaf-sugar in texture, are called Saccharine or Statuary Marble. Magnesian L., or Dolomite (q.v.) is a rock in which carbonate of magnesia is mixed with carbonate of lime. Particular names are given to some limestones from the kind of fossils that abound in them, as Nummulite, Hippurite, Indusial, and Crinoidal limestones; and to others from the formation to which they belong, as Devonian, Carboniferous, and Mountain Limestones.

LIM'FIORD: see DENMARK.

LIMIT, n. lim'it [F. limite, a limit—from L. līmes or limitem, a limit: It. limite]: utmost extent; bound or border; the thing which bounds: restraint; hindrance: V. to set bounds to; to circumscribe; to restrain. Lim'-ITING, imp.: Adj. circumscribing; restricting. Lim'ited, pp.: Adj. narrow; restricted. Lim'itless, a. -les, unbounded; immense. Limitable, a. lim'it-a-bl, that may be bounded. LIM'ITER, n. -ter, one who limits; in OE., a friar licensed to beg, or doing duty, within certain limits. Lim'ita'tion, n. -tā'slun, the act of bounding; restriction; in OE., limited time. LIM'ITEDLY, ad. -li. LIM'ITEDNESS, n. -nes, the state of being limited. LIM-ITED LIABILITY: see under LIABLE. LIMITARY, a. lim'iter-i, in OE., that acts as a guard at the boundaries; restrictive. Limitate, a. līm'ī-tāt, in bot., bounded by a markedly distinct line.—Syn. of 'limit, n.': boundary; border; bound; frontier; confines; precincts; purlieu; edge; termination.

LIMITATION, in Law: limit of time allowed to parties in which to commence their suits or actions, or other proceedings; device for settling disputed claims by lapse of time. In all civilized countries, some period is prescribed by statute (called statutes of limitations, or prescription) with this view, though the limit is variously fixed in different countries. In England, and most of the states of the union, suits to recover land must generally be brought (or the proper entry be made) within 20 years; and suits to recover debts (including bills of exchange) and damages within six years.

LIMITED LIABILITY-LIMITS.

In the United States generally, personal actions must be brought within six years; actions for slander within two years. In Scotland, Prescription is the principle adopted. Prescription looks to the length of time during which the defendant in a disputed claim has been in possession of the matter in dispute; while Limitation looks to the length of time during which the plaintiff has been out of possession: see Prescription, in Law.—In Louisiana, the laws of limitation are essentially those of the Partidas, or 'Spanish code'; thus exceptional among the states. See Patterson's Compendium of English and Scotch Law.

· LIMITED LIABILITY: see Joint-Stock Company: Liability.

LIMITS, THEORY OF: important principle in Mathematics; inasmuch as many branches of the science, including the differential calculus and its adjuncts, consist of nothing else than tracing the consequences which flow from this notion of a limit, of which the following are simple illustrations: The sum of the series $1+\frac{1}{2}+\frac{1}{2}$ $\frac{1}{4} + \frac{1}{8} + \text{etc.}$, approaches nearer and nearer to 2 as the number of terms is increased; thus, the several sums are $1\frac{1}{2}$, $1\frac{3}{1}$, $1\frac{7}{8}$, $1\frac{7}{15}$, etc., each sum always differing from 2 by a fraction equal to the last of the terms which have been added; and since each denominator is double of the preceding one, the further the series is extended, the less the difference between its sum and 2 becomes; also this difference may be made smaller than any assignable quantity—say, $\frac{1}{100}$, $\frac{1}{00}$, by merely extending the series till the last denominator becomes greater than 100,000 (for this there is need to take only 18 terms; 3 terms more will give a difference less than $\frac{1}{1},\frac{1}{000},\frac{1}{000}$; and so on); again the sum of the series can never be greater than 2, for the difference, though steadily diminishing, still subsists under the circumstances, 2 is said to be the limit of the sum of the series. Thus the criteria of a limit are, that the series, when extended, shall approach nearer and nearer to it, in value, and so that the difference can be made as small as we please. Again, the area of a circle is greater than that of an inscribed hexagon and less than that of a circumscribed hexagon; but if these polygons be converted into figures of twelve sides the area of the interior one will be increased, and that of the exterior diminished, the area of the circle always continuing intermediate in position and value; and as the number of sides is increased, each polygon approaches nearer and nearer to the circle in size; and as, when the sides are equal, this difference can be made as small as we please, the circle is said to be the limit of an equilateral polygon, the number of whose sides is increased indefinitely; or, in another form of words commonly used 'the polygon approaches the circle as its limit when its sides increase without limit,' or again, when the number of sides is infinite, the polygon becomes a circle.' By the terms 'infinite' and 'zero' in

mathematics, nothing more is meant than that the quantity to which the term is applied is either increasing without limit or diminishing indefinitely; and if this were kept in mind, there would be much less confusion in the ideas connected with these terms. From the same cause has arisen the discussion concering the possibility of what are called vanishing fractions (i.e., fractions whose numerator and denominator become zero simultane-

ously) having real values; thus $\frac{x^2-1}{x-1}=\frac{0}{0}$, when x=1;

but by division we find that the fraction is equal to x+1, which = 2, when x = 1. Now, this discussion could never have arisen had the question been interpreted

rightly, as follows: $\frac{x^2-1}{x-1}$ approaches to 2 as its limit,

when x continually approaches 1 as its limit, a proposition which can be proved true by substituting successively 3, 2, $1\frac{1}{5}$, $1\frac{1}{1}$, $1\frac{1}{10}$, $1\frac{1}{100}$, etc., when the corresponding values of the fraction are 4, 3, $2\frac{1}{5}$, $2\frac{1}{10}$, $2\frac{1}{100}$, etc. The doctrine of limits is employed in the Differential Calculus (q.v.). The best and most complete illustrations of it are in Newton's *Principia*; and in chapters on Mixima and Minimi, Curves, Summation of Series, and Integration generally, in ordinary works on the Calculus.

IMMA, lim'ma, in Musie: interval which, on account of its exceeding smullness, does not appear in modern practice, but which, in the muthematical calculation of the proportions of different intervals, is of great importance. The L. makes its appearance in three different magnitudes—viz., the great L., which is the difference between the large whole tone and the small semitone, being in the proportion of 27 to 25; the small L. which is the difference between the great whole tone and the great semitone, being in the proportion of 135 to 138; and the Pythagorean L., which is the difference between the great third of the ancients (which consisted of two whole tones) and the perfect fourth, the proportion of which is as 256 to 243.

LIMN, v. līm [F. enluminer, to illuminate, to limn—from L. illuminārē, to illuminate]: to draw or paint; to paint in water-colors—ehiefly restricted to portrait or figure painting. Limning, imp. līm'ing: N. the art or act of drawing or painting in water-colors. Limned, pp. līmd. Limner, n. līm'nėr, one who paints on canvas or paper; a portrait-painter.

LIMNÆA, līm-nē'a [Gr. limne, a swamp]: genus of gasteropodous mollusks of ord. Pulmonata, giving its name to a family, Limnœadæ, allied to Helicidæ (Snails), Limacidæ (Slugs), etc. The species of this family are numerous, and abound in fresh waters in all parts of the world. They feed on vegetable substances. They all have a thin, delicate, horn-colored shell, capable of con-

LIMNORIA-LIMOGES.

taining the whole animal when retracted, but varying much in form in the different genera; being produced into a somewhat elongated spire in the true Limnææ (POND-SNAILS), while in Planorbis the spire is coiled in the same plane, and in Ancylus (RIVER LIMPETS) it is limpet-shaped, with a somewhat produced and recurved tip. Many of the Limnæadæ have a habit of floating and gliding shell downward at the surface of the water, as may readily be observed in a fresh-water aquarium, in which they are of great use in preventing the excessive growth of confervoids, and removing all decaying vegetable matter. They serve the same purpose in the economy of nature in lakes, ponds, and rivers, and furnish food for fishes. They are hermaphrodite. deposit their eggs on stones or aquatic plants, enveloped in masses of a glairy substance. The development of the young mollusk may easily be watched in the aquarium, the membrane of the egg being perfectly transparent.

LIMNORIA, līm-nō'rī-a: genus of crustacea of the ord. Isopada, containing only one known species, which however is important from the mischief that it does to piers, dock-gates, and other wood-work immersed in sea-water on some coasts of Europe. It is only about a sixth of an inch in length, of an ash-gray color, with black eyes, composed of numerous ocelli, placed close together. The head is broad. The legs are short. The general appearance resembles that of a small wood-louse, and the creature rolls itself up in the same manner, if seized. contents of the stomach consist of comminuted wood, and food is the object of the perforation of wood for which the L. is notable. It was very troublesome during the building of the Bell Rock Light-house, England, and the piers at Southampton have suffered greatly from it. The kyanizing of wood and other expedients have been resorted to, to prevent its ravages.

LIMOGE' (or LIMOGES') STYLE, in Enamel: see En-

Vienne, France, and of the former province of Limousin; picturesquely situated on a hill in the valley of the Vienne, 67 m. s.e. of Poitiers. It is an ancient city, the seat of a bishop: some of its houses date from the middle ages. In the 4th c. it had palaces, baths, its own senate, and the right of coinage. It has a cathedral, begun in the 13th c., completed 1851; a number of scientific and benevolent institutions and public buildings; considerable manufactures of porcelain (the principal industry—employing 5,800 hands), of druggets, of a kind of packthread known as Limoges, etc. It was the Augustoritum of the Romans, and afterward received the name Lemovica, whence the present Limoges. Before the French Revolution, it had more than 40 convents. Pop. (1880) 63,126; (1891) 72,697; (1901) 84,121.

LIMONITE-LIMPET.

LIMONITE, n. $l\bar{l}'m\breve{o}n-\bar{l}t$ [Gr. leimon, a moist grassy place: F. limonite]: a term applied to brown iron oreso called because allied varieties are found in bogs. See Hæmatite.

LIMOUS, a. lī'mus [L. limus, slime]: muddy; slimy; thick.

LIMOUSIN, $l\bar{e}$ - $m\hat{o}$ - $z\check{a}ng'$: formerly a province of France, now comprised in the depts. Haute-Vienne and Corrèze.—See Limoges.

LIMOUX, lē-mô' (anc. Limosum): town of France, dept. of Aude, in the centre of a fertile valley, on the left bank of the Aude, 52 m. s.e. from Toulouse. There are manufactures of fine broadcloths, yarn factories, tanneries, dye-works, etc. The neighborhood produces a much esteemed white sparkling wine, Blanquette de Limoux, which rivals champagne in excellence. Diligences ply regularly to Toulouse, Carcassonne, and Foix. Pop. 5,500.

LIMP, v. limp [Low Ger. lumpen, to limp: Dan. lumpe, to limp, to go lame]: to walk as with a slight lameness; to halt: N. a halt in walking. Limping, imp. limping: Adj. halting; walking lamely. Limped, pp. limpt. Limpier, n. -ėr, one who walks lamely. Limpingly, ad. -li.

LIMP, a. limp [Swiss, lampen, to hang loose: Icel. limpa, limpness, weakness (see Limber 1)]: wanting stiffness; flexible; flaccid.

LIMPET, n. lim'pet [probable OF. lempette or lempine -from L. lepas or lepădem, a limpet], (Patella): genus of gasteropodous mollusks, of ord. Cyclobranchiata, type of the family Patellida. In all this family, the shell is nearly conical, not spiral, and has a wide mouth, and the apex turned forward. The animal has a large round or oval muscular foot, by which it adheres firmly to rocks, the power of creating a vacuum being aided by a viscous secretion. Limpets live on rocky coasts, between tide-marks, and remain firmly fixed to one spot when the tide is out, as their gills cannot bear exposure to the air, but move about when the water covers them; many of them, however, it would seem, remaining long on the same spot, which in soft calcareous rocks is found hollowed to their exact form. They feed on alga, which they eat by means of a long ribbon-like tongue, covered with numerous rows of hard teeth; the Common L. (Patella vuljaris) having no fewer than 160 rows of teeth on its tongue, 12 in each row, 1,920 teeth in all. The tongue, when not in use, lies folded deep in the interior of the animal. The gills are arranged under the margin of the mantle, between it and the foot, forming The sexes are distinct.—The power a circle of leaflets. of adherence of limpets to the rock is very great, so that unless surprised by sudden seizure, they are not easily removed without violence sufficient to break the shell. The species are numerous, and exhibit many varieties

LIMPID-LINCOLN.

of form and color. The Common L. is much used for bait by fishermen; it is used also for food. Some of the limpets of warmer climates have very beautiful shells. A species found on the w. coast of S. America has a shell 12 inches wide, often used as a basin.

LIMPID, a. lim'pid [F. limpide, clear, bright—from L. limpidus, clear, bright: It. limpido]: clear; transparent. Lim'pidness, n. -nës, or Limpid'ity, n. -pid'i-ti [F. limpidité]: clearness; transparency; purity.—Syn. of 'limpid': pellucid; translucent; lucid; pure; crystal.

LIMPO'PO: see Oori.

LIMULUS, n. līm'ū-lŭs [L. limŭlus, somewhat askance—from limus, looking sidewise]: the Molucca crab, the king-crab, or horse-shoe crab, a creature of singular form, having a long spear-shaped tail.

LIMY: see under LIME 1.

LIN, or Lyn, n. lin [AS. hlynna, a torrent: W. llyn, a pool]: a fall of water; a cataract; the face of a precipice.

LINA'CEÆ: see FLAX.

LINARES, *lē-nâ'rēs*: town of Spain, province of Jaen, 24 m. n.n.e. from Jaen. The neighborhood was celebrated in ancient times for its mines of copper and lead, which are still very productive. A fine fountain which adorns the town is supposed to be Roman. Pop. (1877) 36,630. (1887) 29,692; (1900) 38,245.

LINCH-PIN, n. linsh'pin [AS. lynis, an axle-tree: Ger. lündse and lünse; Dut. lundsch and luns; Dan. lund-stikke, a linch-pin]: a pin which fastens a wheel on the axle-tree.

LINCOLN, lingk'ăn: city, cap. of Logan co., Ill.; on the Peoria Decatur and Evansville, Chicago and Alton, and Wabash St. Louis and Pacific railroads, 157 m. s.s.w. of Chicago, 28 m. n.n.e. of Springfield, 45 m. s.e. of Peoria. It is the seat of Lincoln Univ. (Cumberland Presb., organized 1866), which had (1902) 11 instructors, 189 students, and 3,000 vols. in its library; pres. J. L. Goodknight, A.M.—L. contains 11 chs., co. court house, state institution for idiots, high school, graded schools, 3 nat. banks (cap. \$160,000), 2 daily and 4 weekly papers, agric. implement works, and a number of factories. Pop. (1870) 5,000; (1880) 5,639; (1890) 6,725; (1900) 8,962.

LINCOLN: town in Providence co., R. I., 6 m. n. of Providence; comprising several villages. Pop. (1880) 13,765; (1890) 20,355; (1900) 8,937.

LINCOLN.

LINCOLN, lingk'ŭn: city, county-seat of Lancaster co., and capital of Neb., on Salt creek, a tributary of the Platte river; about 60 m. s.w. of Omaha, 475 m. w. by s. of Chicago; terminus of the Atchison and Nebraska r.r.. and at the junction of the Midland Pacific and the Bur lington and Missouri River r.r's. The city is beautifully located in the midst of a fertile, undulating prarie, con taining valuable salt springs, and affording plenty of excellent building sites; it is laid out regularly, with numbered avenues running n. and s., intersecting the streets lettered according to the alphabet, the avenues 120 ft. wide, and the streets 100 ft. The state house is a handsome building of white limestone costing \$100,000; the post-office, revenue office, etc., are in a massive building recently completed at a cost of \$200,000. L. is the seat of the state university and agricultural college, open to students of both sexes, whose fine brick building cost \$150,000. There is also a home for the friendless; and, just outside the city limits, the state penitentiary, costing \$312,000, and the state insane asylum, of sandstone, costing \$136,000. Other public buildings are the state library, opera house, and academy of music, high school and other public school buildings, several national and other banks, and about 15 churches. It has several admirable hotels. Here also is one of the largest printing and publishing houses in the west, from which are issued several daily, weekly, and monthly periodicals. The city has a board of trade, a number of very large wholesale houses, foundries, pork-packing establishment, spring-bed factory, etc. It was laid out 1867, July. Pop. (1880) 13,003; (1890) 55,154; (1900) 40,169.

LINCOLN (called by the Romans Lindum; from which, with Colonia subjoined, comes the modern name): city of England, cap. of the county of L. (see Lincolnshire); parliamentary and municipal borough and county of itself; on the Witham, 140 m. n.n.w. of London by railway. Built on the slope of a hill, which is crowned by the cathedral, the city is imposing in effect, and can be seen from a distance. It is very ancient, is irregularly laid out, and contains many interesting specimens of early architecture. The cathedral, one of the finest in England, is the principal building—earliest purely Gothic building in Europe, though comprising within its precincts a variety of styles; an object of unrivalled interest to architect and antiquary. Some portions of it date as far back as 1092, some other parts are of the 12th and 13th c. It is surmounted by three towers, two of which, 180 ft. in height were formerly continued by spires of The central tower, 53 ft. square, is 300 ft. high. The interior length of the cathedral is 482 ft., the width, 80 ft. The famous bell, Tom of Lincoln, cast 1610, was hung in one of the w. towers: it was broken up 1834, and, with six other bells, was recast to form the present large bell and two quarter bells. The present bell, which hangs in the central tower, is 5 tons 8 ovt, in weight,

with the year

.

LINCOLN.

and 6 ft. 10½ inches in diameter at the mouth. L. contains many other interesting religious edifices, among which are three churches, dating from before the Reformation, etc., numerous schools, and benevolent institutions. Several iron foundries, manufactories of portable steamengines and agricultural machines, and large steam flourmills are in operation here, and there is active trade in flour; also brewing and machine-making, with trade in corn and wool. Pop. (1891) 41,491; (1901) 48,784.

corn and wool. Pop. (1891) 41,491; (1901) 48,784.

L., under the Romans, was a place of importance, and under the Saxons and the Danes, it preserved a good position. It was the seat of extensive and important trade at the time of the Norman Conquest; but its advancement after that time was not rapid. It contains some very interesting antiquities, e.g., the Roman gate, the remains of the palace and stables of John of Gaunt.

and the town-hall.

LINCOLN, lingk'un, Abraham, sixteenth President of the United States: 1809, Feb. 12-1865, Apr. 15; b. Hardin co., Ky. His ancestors came from England about 1638, settling in Mass. His grandparents moved from Va. to Ky. 1782, where his grandfather was killed by an Indian two years afterward, leaving a widow with three sons and two daughters, Thomas L., father of Abraham, being then but six years old. Thomas L. married Nancy Hanks, of Va., 1806, and settled in what is now Larue co., Ky., where Abraham was born, and where he began going to school when, 1816, the family removed to Ind. Here in their rude log-cabin his mother died, 1818-a bright, intelligent, industrious, and devout woman, of whom her son could truly say what he used to say of his step-mother, 'All that I am, or hope to be. I owe to my angel mother.' A year and a month later his father married again; the family lived a poor, laborious life; the son receiving only about a year of the rudest school education, but showing great taste for reading, perusing over and over again the few books he could get, such as Æsop's Fables, Pilgrim's Progress, Robinson Crusoe, a History of the United States, Life of Washington, etc. In 1825, he managed a ferry across the Ohio; 1828, he took a flat-boat with produce to New Orleans; 1830, the family removed to Ill., clearing and l'encing 15 acres of land about 10 m. w. of Decatur. This year Abraham became of age. He was 6 ft. 4 in. tall, of gigantic strength and great agility, and by his studious use of every opportunity had gained a fair mastery of the English language, of American history, and of elementary mathematics, besides having developed a very practical and shrewd turn of mind, unusual narrative and rhetorical powers, with great humor and sterling integrity of character. About this time he made his first public speech, on the navigation of the Sangamon river, in reply to one by a candidate for the legislature. In 1831 he took another flat-boat to New Orleans, for Den-

LINCOLN.

ton Offutt; and on his return attended to the latter's store in New Salem, Monard co., where he employed his abundant leisure in studying surveying and the principles of law. Next year came the Black Hawk Indian war. L. at once enlisted, and was made captain, but served in that capacity only about a month, when his company was mustered out of service. He immediately joined another company, however, as private; and served without any notable experiences, until finally mustered out a few weeks later, 1832, June 16. Returning home, he entered on a late and hasty canvass for the legislature, announcing his platform thus: 'I presume you all know who I am; I am humble Abraham Lincoln. I have been solicited by many friends to become a candidate for the legislature. My politics are short and sweet, like the old woman's dance. I am in favor of a national bank; I am in favor of internal improvements, and a high protective tariff. These are my sentiments and political principles. elected, I shall be thankful; if not, it will be all the same.' He was defeated, though his own neighborhood voted for him almost unanimously. Thereupon he entered into partnership with another man in the grocery and dry goods business in New Salem. His partner was worthless, and the firm failed, L. being left with the indebtedness of the concern resting upon him. By frugality and hard work he paid it off entirely in a few years. He next took to studying law, and then to surveying. 1833 he was appointed postmaster of New Salem, with a beggarly salary but plenty of time for reading and study. He held the office for three years, being at the same time also deputy for the county surveyor. In 1834 he was again candidate for the legislature, and this time was elected by a large majority, afterward being reëlected three times, 1836,38,40, until he refused to serve again. In 1835 he became engaged to Ann Rutledge, a daughter in the family with whom he was boarding at New Salem. But before they could be married this young lady died, leaving her lover despondent. His service in the legislature was such as to make him

His service in the legislature was such as to make him a recognized leader of the whig party, and a proficient lawyer. He was instrumental in having the state capital removed from Vandalia to Springfield, where he settled 1837. In the legislature, too, he had his first encounter with Stephen A. Douglas, whose political and oratorical opponent he continued to be from this time until 1860, when Douglas was finally defeated and Lincoln elected to the presidency. In 1840 L. entered with fervor into the campaign for Harrison, being an elector on the Harrison ticket; and the same year also met and engaged himself to marry Mary, daughter of the Hon. Robert S. Todd, who had just come from Lexington, Ky. For some reason connected with this engagement, L. fell into a deep melancholy and was in danger of becoming insane. He recovered, however, and married Miss Todd, 1842.

Nov. 4.

Always an admirer of Henry Clay, he was made an elector on the Clay ticket 1844; and two years afterward was elected to congress, by an unusually large majority. over the Rev. Peter Cartwright. Now began his antislavery record in his proposing a scheme for the abolition of slavery in the District of Columbia, which, however, characteristically moderate as it was, congress refused to consider. He served only one term in congress, after which for several years he was not specially active in politics, until the repeal of the Missouri Compromise, 1854, an act which he regarded as a gross breach of faith, and which involved him in a series of debates with Douglas in the years following, which attracted national attention, and greatly enhanced the reputation of L. as a debater and orator. In 1858 he appeared before the state convention with a view to securing the nomination for U.S. senator. In his speech he uttered these prophetic words, soon after to be fully realized: 'A house divided against itself cannot stand. I believe this government cannot endure permanently half slave and half free. I do not expect the union to be dissolved -I do not expect the house to fall-but I do expect it will cease to be divided. It will become all one thing or all the other. Either the opponents of slavery will arrest the further spread of it, and place it where the public mind shall rest in the belief that it is in course of ultimate extinction; or its advocates will push it forward. till it shall become alike lawful in all the states, old as well as new-North as well as South.' These words were deemed highly impolitic by his partisans; and, indeed, they did not secure him the senatorship, Douglas being reëlected, much to L.'s disappointment. But they did enhance his fame as a man above political trickery and time-serving, as a statesman capable and courageous enough to treat political questions from the ethical side, and as involving fundamental principles of right and

It was largely owing to the attention that his six years' contest with Douglas aroused, and to his manifest superiority over the 'little giant,' culminating in his famous Cooper Institute address in New York, 1860, Feb. 27, that he began more and more to be talked of in connection with the republican nomination for the presidency. When the republican national convention met at Chicago, 1860, May 16, William H. Scward was the leading candidate, though L. was the popular man outside the convention. On the third day balloting began, and L. was nominated on the third ballot, his chief competitors besides Seward, being Cameron, Chase, Dayton, McLean, Collamer, and Bates. Next day he was officially notified of his nomination, at Springfield; and accepted in a brief speech. Hannibal Hamlin of Maine was nominated for the vice-presidency. Many republicans, however, were not satisfied, and nominated Bell as the candidate of the 'constitutional union' party; but their

defection was more than offset by the split in the democratic party, the more conservative element nominating Douglas, while the extreme slavery men utterly repudiated him and nominated Breekenridge. The canvass was an exciting one, it being felt that the gravest national questions depended for solution on the result. L. received of the popular vote, 1,866,462; Douglas, 1,375,157; Breckenridge, 847,953; Bell, 590,631. None of them had a majority. But when, Dec. 5, the electoral college met, the vote of the electors stood as follows: L., 180; Douglas, 12; Breekenridge, 72; Bell, 39; giving L. a clear ma-

jority of 57.

Even before the election certain extremists in the south had been preparing for secession; and, Nov. 10, four days after it, the legislature of S. C. ordered the state convention to consider the question of seeession, and, Dec. 20, that state formally seceded from the union, and by 1831, Feb. 18, the 'Confederate States of America' were organized, and Jefferson Davis was made their president. Troops were being massed in the south, arms and ammunition accumulated, and fortifications strengthened. In this ominous state of affairs the president-elect was preparing for his inauguration. Fearing assassination, his friends prevailed on him to travel to Washington in comparative secrecy, where he was inaugurated, 1861, Mar. 4. His inaugural was temperate yet firm in tone, denying the right of any state to seeede, and declaring his resolve to maintain the union at all hazards. The Confederates, however, had already in Jan. virtually begun the civil war by besieging Fort Sumpter, in Charleston harbor, which was held by a handful of Federal troops under Maj. Robert Anderson. Apr. 13 this fort was obliged to surrender after 34 hours' bombardment by the Confederates under Gen. Beauregard. Two days afterward L. issued a proclamation calling for 75,000 militia to serve 3 months, and, May 4, ordered the enlistment of 64,748 soldiers and 18,000 seamen for 3 years' service, and May 19, instituted a blockade of the southern ports. The first blood was shed when, in response to this call, the 6th Mass. regt. was attacked by a mob while marching through Baltimore. Other minor engagements followed; and, 1861, July 21, the first important battle was fought, at Bull Run, the Federal forces being routed, and the national capital endangered. north speedily recovered from this shock, and volunteers poured into Washington without waiting to be called. In Oct. Gen. Scott was retired, and Gen. McClellan given command of the Federal troops. He set himself with great skill thoroughly to organizing the army.

Meanwhile the slavery question came more and more into the foreground. 1861, Aug., congress passed an act confiscating the rights of slaveholders in active rebellion to their slaves. Extreme abolitionists urged more radical measures. Gen. Fremont declared martial law in Mo., and the freedom of all slaves owned by active rebels.

LINCOLN.

L. believing such a measure premature and unauthorized, countermanded it. Sentiment was divided in the north; but the great mass of the people sustained the conservative counsels of the president. 1862, Mar. 6, he sent a message to congress recommending a gradual abolition and offering pecuniary compensation to slave owners. Congress passed an act in conformity with tlis, but no result followed. In Apr. it passed an act, which L. approved, emancipating all slaves in the District of Columbia, with compensation to the owners. When Gen. Hunter, however, 1862, May 9, presumed to declare all slaves in Ga., Fla., and S. C., free, L. at ence issued a proclamation declaring this order void and unauthorized, at the same time repeating the offer to compensate all who should voluntarily free their slaves. In the neith the anti-slavery sentiment was steadily growing: and in June congress prohibited slavery in all the territories. July 12 L. again specially urged upon the border slavestates his proposal of a gradual emancipation with compensation, saying: 'If the war centinues long, as it must if the object be not sooner attained, the institution in your states will be extinguished by mere friction and abrasion—by the mere incidents of the war. It will be gone, and you will have nothing valuable in licu of it.' But his words seemed to have no effect. It was then, 1862, July, that he reached the conclusion that a general and final abolition of slavery must soon be brought about, and that apparently nothing else was left him to do than to issue a proclamation of emancipation and so accomplish the great end at one blow. He soon wrote such a proclamation and submitted it to members of liseslinet. But the course of military affairs constrained lim not to consummate the matter just at this time. 'My paramount object is to save the union,' he said, 'and not either to save or destroy slavery. If I could save the union without freeing any slave, I would do it; if I could save it by freeing all the slaves, I would do it. Meanwhile the outcome of the war at this period

seemed doubtful. Early in 1862, the Federal forces had had successes at Fts. Donelson and Henry, and at Shileli. Roanoke island on the N. C. coast lad been taken. The Monitor had subdued the Merrimac. New Orleans had been taken, and the Mississij pi in the main was in the control of the Federal government. Lut events were less favorable during the second quarter of the year. McClellan had moved 'on to Richmond,' Lut had finally been forced to retreat and abandon the campaign. Pope had been driven back upon Washington. At Antietam, indeed. Lee's advance northward had been stopped, but he was not fatally crippled. Fredericksburg and Chancellorsville both had been disastrous Federal defeats. All this, however, was but ripening popular sentiment, and making clear the necessity of emancipation, if only as a war-measure, a means of self-preservation. Accordingly, 1862, Sep. 22, L. issued his preliminary proclamation,

declaring that on and after 1863, Jan. 1, all persons held as slaves in states or parts of states then in rebellion, should be free. Then, after another attempt, Dec. 1, to bring about gradual abolition with compensation, he made the final proclamation declaring Ark., Tex., Miss., Ala., Fla., Ga., S. C., N. C., and certain parts of La. and Va., to be in rebellion against the United States; and that as a necessary war-measure he did 'order and declare that all persons held as slaves within said designated states and parts of states, are and henceforth shall be free.' As he said two years afterward, this proclamation was 'the central act of my administration, and the great event of the 19th century.' Its legal validity was indeed questioned by some, but never had a verdict passed upon it by the national courts; circumstances and the course of events fully justified it. Moreover in 1864, Dec., L. urged congress to adopt a 13th amendment to the constitution making slavery illegal and unconstitutional. This was done, 1865, Jan. 31, and before the close of the year, 27 of the 36 states of the union had ratified the amendment, which therefore was officially declared adopted, 1865, Dec. 18.

After the reverse at Chancellorsville the tide of success turned steadily and strongly in favor of the Federal armies, whose number, including negro troops who were now regularly enlisted, reached about a million men. The fall of Vicksburg and Port Hudson opened the Mississippi. Lee's invasion of Penn. resulted in his defeat, after a 3 days' struggle, at Gettysburg—the greatest battle of the war. It was here that, 1863, Nov. 19, at the dedication of the battle-field as a national soldiers' cemetery, L. delivered, almost ex tempore, the following matchless oration, which at once took its place as a classic

unsurpassed among addresses of the kind. 'Fourscore and seven years ago, our fathers brought forth upon this continent a new nation, conceived in libcrty, and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that war. We have come to dedicate a portion of that field as a final resting-place for those who here gave their lives that the nation might live. It is altogether fitting and proper that we should But in a larger sense we cannot dedicate, we cannot consecrate, we cannot hallow this ground. brave men, living and dead, who struggled here, have consecrated it far above our power to add or detract. The world will little note, nor long remember, what we say here, but it can never forget what they did here. It is for us, the living, rather to be dedicated here to the unfinished work which they who fought here have thus so far nobly advanced. It is rather for us to be here dedicated to the great task remaining before us,—that from these honored dead we take increased devotion to that cause

LINCOLN.

for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom—and that government of the people, by the people, for the people, shall not perish from the earth.'

Their resources were failing; men and provisions were becoming scarce. The Federals were stronger than ever. Grant was made commander of their armies, and set him self pertinaciously to the capture of Richmond. Sherman was sweeping like a tornado through the very heart of the Confederacy, from the Mississippi valley to Savanah, and thence northward to meet Grant. Lee was forced out of Richmond, and surrendered at Appomattox, 1865, Apr. 9. The war was ended. The north was wild with joy. The surrender of Johnston to Sherman a few weeks later, Apr. 26, was only the inevitable consequence

of Appomattax.

A glance at some of the president's diplomatic and political acts previous to this culmination is proper here. Several times during the war serious foreign complications were threatened. The arrest by Capt. Wilkes of two Confederate envoys, Mason and Slidell, on their way to England on the British steamer Trent, threatened our peace with Great Britain. Though public sentiment sustained Wilkes, L. saw that his action had been illegal, and ordered the surrender of the prisoners. When Maximilian was set up as emperor of Mexico under the protection of French troops, our government strictly maintained its policy of non-intervention, though declaring the sympathy of its people with a Mexican republic, and that our own safety was dependent on the maintenance of free republican institutions throughout America, at the same time accepting the assurance of France that she did not intend to overthrow or establish local government. When in 1863 France proposed a mediation between the north and south, L. firmly declined to consider the proposal. Certain agents in Canada, 1864, trying to arouse sympathy for the confederacy, by conveying the impression that the south wished to treat for peace, declared themselves authorized by the confederacy to enter into peaceful negotiations. L. at once promised them safe conduct to Washington and an interview. This forced them to confess that the confederacy had never authorized them. 1865, Feb. 3, he and Secretary Seward met three Confederate commissioners in an informal conference at Hampton Roads, at which the latter proposed a cessation of hostilities and postponement of its issues until after the expulsion of the French from Mexico by the allied forces of the north and south. L., however, insisted as the inevitable conditions of any adjustment, first, the restoration of the national authority throughout the states: second, no recession by the national government on the slavery question; and third, no

cessation of hostilities until the war should be ended and all Confederate troops disbanded. This closed the conference.

In 1864, Nov., the regular presidential election was to be held. The republicans nominated L.; the democrats nominated McClellan. The election showed 2,216,076 ballots cast for L., and 1,808,725 for McClellan; while of the electors 212 voted for L. and only 21 for McClellan.

The former was inaugurated 1865, Mar. 4.

Little more than a month after, in midst of the national rejoicing over the virtual conclusion of the war by Lee's surrender at Appomattox, a sudden chill struck the heart of the nation by the news flashed over the wires from Washington that the president had been assassinated. He had visited Grant's army, and with it entered Richmond the day after its surrender. He returned to Washington, Apr. 11, and made an address on the question of reconstructing the governments of the states lately in rebellion. On the 14th, being Good Friday, he and his wife, together with Maj. Rathbone and Miss Harris, were invited to Ford's Theatre. They occupied a private box, and L. was absorbed in the play, when at about 10:30 P.M. a shot raug through the hall. The next instant John Wilkes Booth jumped down from the president's box upon the stage, brandishing a dagger, and shouting, 'Sic semper tyrannis! The south is avenged!' rushed behind the scenes, out through the stage door, mounted a horse, and escaped into the night. The president sat motionless. The assassin's ball had pierced his brain, and he was unconscious. He was tenderly carried into a house across the street, where he died at 7 o'clock next morning, 1865, Apr. 15. Booth had entered the president's box from the corridor behind, and unseen by any one had discharged his pistol at the back of his victim's head, the ball entering just behind the ear. Maj. Rathbone, trying to seize the murderer, had been stabbed in the arm by him. Everything was done so quickly, that before the audience knew what had happened, the assassin was gone. On the same night the attempt was made also to murder Secretary Seward at his house, where he was confined to his bed by an accident. Other prominent officials also were to have been made way with had not the plot failed. The discovery of this plot and the news of the assassination occasioned horror throughout the civilized world. The murder had been planned by a gang of irresponsible individuals, without the authority, connivance, or knowledge of those outside of their fanatical circle. Booth, who had broken his leg in jumping from the box upon the stage, was pursued and shot in a barn where he had concealed himself, 12 days after his All his confederates were likewise soon brought crime.

Next to the name of Washington there is none so deeply and lovingly enshrined in the American heart and that of Abraham Lincoln; and James Russell Lowell in

his classic essay on him, stated the simple truth when he wrote:

'A civilian during times of the most captivating military achievement, awkward, with no skill in the lower technicalities of manners, he left behind him a fame beyond that of any conqueror, the memory of a grace higher than that of outward person, and of a gentlemanliness deeper than mere breeding. Never before that startled April morning did such multitudes of men shed tears for the death of one they had never seen, as if with him a friendly presence had been taken away from their lives, leaving them colder and darker. Never was funeral panegyric so eloquent as the silent look of sympathy which strangers exchanged when they met on that day. Their common manhood had lost a kinsman.'

LINC'OLN, BENJAMIN: 1733, Jan. 24-1810, May 9; b. Hingham, Mass.: soldier. He received a common school education, and while active in public affairs, and holding the offices of magistrate, member of the provincial legislature and congress, and col. of militia, he engaged in farming till 1773. He was appointed maj.gen. of state militia 1774; won the friendship of Washington during the siege of Boston; was chairman of the committee that prepared instructions to the representatives previous to the Declaration of Independence 1776, May; commanded the expedition which cleared Boston harbor of British vessels June; reinforced Washington after his defeat on Long Island; and took part in the battle of White Plains and the attack on Fort Independence. In 1777, Feb., he again reinforced Washington with a fresh levy of militia, at Morristown, N. J., and the same month was appointed by congress a maj.gen. in the continental army. months later he was surprised and nearly captured by the British at Bound Brook, N. J. After his escape he served with Washington till July, when he raised another body of New England militia, joined the movement under Schuyler against Burgoyne, seized the British posts at Lake George, broke Burgoyne's line of communication, united with Gates at Stillwater Sep. 29, took command of the right wing, and was severely wounded in the battle of Bemis's Heights Oct. 8. His wounds kept him from active service nearly a year, and lamed him In 1778, Aug., he joined the army in the s., and Sep. 25 was appointed by congress its chief commander. For several months he was engaged in protecting Charleston, and in the meantime co-operated with the French troops and fleet in the assault on Savannah till the allies refused to continue operations, when he returned to Charleston. After a skilful and stubborn defense, he was forced by the superior strength of the British, to surrender the city 1780, May 12. He was exchanged early in 1781, joined Washington on the Hudson, took part in the siege of Yorktown, and was deputed by Washington to receive the sword of Cornwallis at the surrender. In 1781, Oct., he was elected by con-

LINCOLN-LINCOLN COLLEGE.

gress sec. of war, and held the office three years, after which he retired to his farm at Hingham, Mass. He commanded the Mass. militia that suppressed Shays's rebellion 1786-87; was chosen lieut.gov. of Mass. 1787; and was collector of the port of Boston 1789-1809. L. was a member of numerous learned socs., and applied his last years to literary and scientific pursuits.

LINCOLN, Levi, Ll.D.: lawyer: 1782, Oct. 25—1868, May 29; b. Worcester, Mass.; son of Attor.Gen. Levi L. (1749–1820). He graduated at Harvard College 1802; was admitted to the bar 1805; began practicing in Worcester; opposed the Hartford convention and drew up the legislative protest against that body 1814; was a member of the constitutional convention 1820; speaker of the assembly 1822; lieut.gov. 1823; gov. 1825–34; member of congress 1835–41; collector of the port of Boston 1841–43; pres. of the state senate 1845; and presidential elector and first mayor of Worcester 1848. He was a member of the American Antiquarian Soc., American Acad. of Arts and Sciences, and the Mass. Hist. and Agricultural Socs.; and received the degree Ll.D. from Williams College 1824 and Harvard 1826.

LINC'OLN, ROBERT TODD: lawyer: b. Springfield, Ill., 1843, Aug. 1; son of Pres. Abraham L. He prepared for college at Phillips Exeter Acad., N. H., graduated at Harvard College 1864, entered the Harvard law school, and was soon afterward commissioned capt. in the army and appointed aid on the staff of Gen. Grant. He served in the field till the surrender of Gen. Lee, and after accompanying the remains of his father to Springfield, resigned his commission and resumed his law studies. After being admitted to the bar in Chicago, 1867, he practiced in Chicago till 1881, when Pres. Garfield appointed him sec. of war. This office he retained till 1885, Mar. 5, at the urgent request of Pres. Arthur, and on retiring from it resumed practice. 1889, Mar. 27, Pres. Harrison appointed him U.S. minister to Great Britain; resigned 1893; and became pres. of the Pullman Palace Car Co. 1897. He has declined numerous tenders of public office, including nominations for pres. and vice-pres. of the U.S. While unlike his father in many respects, he resembles him in quick penetration, deliberate reasoning, and keen judgment of human nature.

LINC'OLN COLLEGE, Oxford: founded 1427 by Richard Fleming, Bp. of Lincoln, for a rector and 7 fellows; afterward greatly augmented by Thomas Rotherham, Bp. of Lincoln, Abp. of York, and lord high chancellor of England, who added five fellowships, and gave a new body of statutes 1479, in which the election of fellows was limited to the dioceses of Lincoln, York and Wells. These limitations have been abolished. The foundation at present consists of a rector, 10 fellows, and 14 scholars. Other scholarships are added from time to time from the proceeds of two suspended fellowships; 12 were

LINCOLNSHIRE-LINCRUSTA WALTON.

founded by Dr. Hutchins, Lord Crewe, Bp. of Durham, and Dr. Radford, rectors. The patronage consists of nine benefices, in the counties of Oxford, Lincoln, Essex, Dorset, and Bucks, of the annual value of £5,414. L. C. has usually between 250 and 300 members on the books.

LINCOLNSHIRE, -sher: maritime county of England; after Yorkshire, the largest in the country; bounded n. by Yorkshire, e. by the North Sea; greatest length n. to s. 75 m.; greatest breadth e. to w. 50 m.; 1,767,962 acres, or 2,762 sq. m.; pop. (1891) 472,778; (1901) 436,820. The coast, from the Humber-which separates the co. from Yorkshire on the n .- to the Wash, is almost uniformly low and marshy; so low, indeed, in one part—between the mouths of the Welland and the Nen—that the shore requires the defense of an embankment from the inroads of the sea. L. has long been divided into three districts, or 'parts,' as they are called-viz., the Parts of Lindsey, an insular district, forming the n.e. portion of L., and including the Wolds or chalk hills (which are about 47 m. in length by 6 m. in average breadth); the Parts of Kesteven, in the s.w.; and the Parts of Holland, in the s.e., including the greater part of the fens. Chief rivers, the Trent, the Ancholme, the Witham, and the Welland. The surface is comparatively level, with the exception of the Wolds in the n.e. soil, though very various, is on the whole very fertile. It includes tracts of grazing-ground unsurpassed in richness, and the 'warp-lands' (see WARPING) along the Trent, produce great crops of wheat, beans, oats, and rape, without aid of manure. No other county in England has finer breeds of oxen, horses, and sheep. Horncastle and Lincoln horse-fairs are frequented by French, German, Russian, and London dealers seeking superior hunters and carriage-horses. The climate, though subject to strong westerly winds, is much the same as that of the other central counties of England. Seven members are returned to parliament.

LINC'OLN'S INN: one of the four English Inns of Court, having exclusive power to call persons to the bar. It is so called because it belonged to the Earl of Lincoln in the reign of Edward II., and became an Inn of Court soon after his death, 1310. See Inns of Court.

LINCRUS'TA WAL'TON: embossed wall-covering, compound of various materials, chiefly linseed-oil chemically prepared and thickened into sheets (see Lino-Leum). The sheets are backed with light canvas, and the yielding material is stamped, sometimes in high relief with a fine ornamental effect. Its original color is usually grayish; it is painted or gilded after being mounted on the wall. It is cheaper than stamped plaster, more pliable than papier-maché; and is water-proof, therefore it can be washed. It was patented in England by Frederick Walton, and was manufactured in this country first in 1882.

LINCTURE-LINDLEY.

LINCTURE, n. lingk'tūr, or Linctus, n. lingk'tūs [L. linctus, licked]: a medicine of the consistence of honey or treacle, to be taken by licking.

LIND, JENNY: see GOLDSCHMIDT, MADAME.

LINDEN, n. lin'dn, or Lind, n. lind [AS. and Dan. lind; Ger. linde, the linden-tree: connected with Icel. linr, smooth, soft, referring to the wood]: the lime-tree: see Lime 3.

LINDLEY, *lind'li*, Daniel, d.d.: Christian missionary: about 1805–1880, Sep. 3; b. Penn. He graduated at Ohio Univ., and at Union Theol. Sem. of Va. 1829; preached successively to a Presb. church in Charlotte, N. C.; and sailed 1834 for the Cape of Good Hope as missionary of the Amer. Board. He with Mrs. L. proceeded 1,000 m. inland to the country of Mosilikatse. It was time of war, and they suffered great hardships. In 1839, he returned to Port Natal and there labored 35 years among the Zulus. Beside teaching Christ he taught the natives useful arts—making brick, building houses, constructing simple furniture; he gave them medicine for their sickness, and his aim was sure against a threatening lion. The natives, as well as the Dutch Boers, loved and honored him. Dr. L. d. Morristown, N. J.

LINDLEY, John: botanist: 1799, Feb. 5-1865, Nov. 1; b. Catton, near Norwich, England, where his father, author of A Guide to Orchard and Kitchen Gardens, owned a large nursery garden. In 1819, L. published a translation of Richard's Analyse du Fruit; and 1829, Monographia Rosarum. Among his most important works are Introduction to the Natural System of Botany (1830); Introduction to the Structure and Physiology of Plants (2 vols. 1832); Flora Medica (1838); and The Vegetable Kingdom (1846), standard work on the subject of classification, an expansion of his Introduction to the Natural System, which had previously (1836) been remodelled under the title, A Natural System of Botany. L. did much to popularize botany by his Ladies' Botany, School Botany, 'Botany' in the Library of Useful Knowledge, etc. His other works, and his contributions to scientific transactions were numerous. In 1829, at the opening of the London Univ., he was appointed prof. of botany, and he continued in that post 31 years, resigning 1860. He was a fellow of numerous learned societies in England and elsewhere.

LINDSAY, lin'zi, Family of: Scottish historical house, of Norman extraction. One of the race obtained lands in England from the Conqueror; another, Sir Walter de L., settling in Scotland under David I., acquired Ercildoun, and Luffness in E. Lothian. The descendant of the latter, William L. of Ercildoun, High Justiciary of Lothian in the latter half of the 12th c., acquired the lands of Crawford in Clydesdale, which the family held till about the close of the 15th c. He married Princess Marjory, sister of King William the Lion, and had three sons: the eldest inherited Crawford; and the descendants of the second were the House of Lamberton, who for a time eclipsed their elder brethren; but the line of both ended in heiresses; and Crawford event-ually came to the descendants of William of Luffness, third son of the justiciary, who, in the 14th c., added largely to their estates by marriage with a coheiress of Lord Abernethy. Sir James L. of Crawford was one of the most notable of the Scotch barons in the battle of Otterburn.

EARLS OF CRAWFORD AND DUKE OF MONTROSE.— Sir Alexander L., younger brother of Sir James of Crawford (hero of Otterburn), acquired large estates in the counties of Angus and Inverness by marriage with the heiress of Stirling of Glenesk and Edzell; and his son David, who, on failure of the line of his uncle, became chief of the family, married the sister of Robert III., and was raised by that king, 1398, to the dignity of Earl of Crawford. In the 15th c., the earls of Crawford were among the most powerful of the Scotch nobility: they assumed a regal state, had their heralds, and were attended by pages of noble birth. Their domains were widely extended over Scotland, but their chief seat was Finhaven, in Angus. David, third earl, entered into an alliance, offensive and defensive, with the eighth earl of Douglas and Macdonald of the Isles, Earl of Ross, and wielded for a time, during James II.'s minority, an authority far exceeding that of royalty. He was slain at Arbroath in a private feud with the Ogilvies. His son, nicknamed 'Beardie,' or the 'Tiger Earl,' renewed the league with Douglas. On James having treacherously stabbed Douglas at an interview at Stirling, he rose in rebellion; and the Earl of Huntly, lieut.gen. of the kingdom, who had aided the Ogilvies at Arbroath, took up arms against him, Earl Beardie was defeated at Brechin, and forfeited; but he was afterward restored to his lands and dignities, and to royal favor, and entertained James at Finhaven, who flung down a loose stone from the castle battlement in fulfilment of a vow which he had taken to make the highest stone of the castle the The family attained their climax of power and wealth under David, fifth earl, a faithful friend of James III., and employed by him in his most important foreign embassies, who was made Duke of Montrose 1488, a title which had never before been bestowed in Scotland

LINDSAY.

but on princes of the blood-royal. David, eighth earl of Crawford, nephew of the Duke of Montrose, had the misfortune to have a son known for his crimes and enormities as 'The Wicked Master;' his conduct lcd his aged father to consent to a transfer of the earldom to David L., of Edzell, next heir. The ninth earl, who succeeded under this conveyance, moved with pity for the rightful heir, son of the 'Wicked Master,' obtained a re-conveyance of the earldom to him after his own de-From that time the fortunes of the family began to decline. The 12th earl was imprisoned by his relatives as a spendthrift. The 16th earl, a companion in arms of the great Montrose, having no issue, through the influence of a powerful cadet of the family, Lord L. of the Byres, a new patent of the earldom was obtained from Charles I., bringing in his branch of the house before the descendants of the uncle of the 16th earl, who had been created Lord Spynie, or the intermediate cadets of Edzell and Balcarres.

LORD LINDSAY OF THE BYRES, VISCOUNT GARNOCK.— Sir William L., younger brother of the first Earl of Crawford, acquired extensive estates with his wife. His grandson was made Lord L. of the Byres, county Haddington, 1445. The Lords L. of the Byres were sturdy champions of popular rights and of the Presbyterian faith; their principal residence was Struthers Castle in Fife. The fourth lord endeavored in vain to dissuade James IV. from his fatal expedition to England 1513; in consequence of which, James vowed that, on his return, he would hang him on his own gate, a threat, rendered futile by the fatal result of Flodden. The fifth lord was one of the four noblemen to whom the charge of the infant Queen Mary was committed on the death of her father. The sixth lord, the fiercest and most bigoted of the Lords of the Congregation, was deputed by the rest to obtain Mary's compulsory resignation at Lochleven, an office which he is said to have discharged in a severe and repulsive manner; and the seventh lord bearded James VI. in the presence-chamber regarding the changes he was effecting in ecclesiastical polity. tenth Lord L. of the Byres was 1644 created Earl of L.; and in virtue of Charles I.'s above-mentioned patent, he became 17th Earl of Crawford. Though a warm partisan of the Covenant, he was a loyal and consistent adherent of the Stuarts. In 1648, he entered with zeal into the proposal to raise an army to effect the king's rescue; and in 1657, while forwarding Charles II.'s plan of marching into England, he was arrested, carried to London, and detained a prisoner in the Tower and Windsor Castle. He was released by the Long Parliament 1660, on the recall of the secluded members, and was reinstated in his offices and dignities at the Restoration. We find him afterward making a strong effort to dissuade Charles from introducing Episcopacy in Scotland. treasurer's grandson by a younger son was created Viscount Garnock 1703. The fourth Viscount Garnock succeeded as 21st Earl of Crawford; his son, the 22d earl, was the last of the direct line of the Byres; and at his decease 1808, the Crawford earldom returned, in terms of the patent of Charles I., to the line of Balcarres, while the Crawford Lindsay estates went to heirs-female. A claim by an alleged descendant of this branch of the house to both peerage and estates, was long a matter of public interest and notoriety: it eventually collapsed from the discovery that the principal documents founded on were ingeniously contrived forgeries.

Sir David L. of the Mount, Lyon king-of-arms, the courtly knight, poet, and philosopher, and friend of the Reformation in its earlier stages, was descended from a natural son of the first Sir William L. of the Byres.

EARL OF BALCABRES AND CRAWFORD.—The Lindsays of Balcarres, in Fife, were a branch, and eventually the representatives of the Lindsays of Edzell, who, as already seen, had temporarily possessed the earldom of Crawford on the attainder of the 'Wicked Master.' The first of them was Lord Menmuir, a lord of session and secretary of state to James VI., possessed of accomplishments and cultivation rare in his age. David was created Lord L. of Balcarres 1633, and his grandson, Alexander, Earl of Balcarres, 1651, in reward of their steady support of the royal cause. The sixth Earl of Balcarres became de jure Earl of Crawford on the death of the 22d earl, the last of the Byres line; and that title has been recognized by the house of lords to belong to his son, James, seventh Earl of Balcarres, and 23d Earl of Crawford, father of the present representative of The Earl of Crawford further preferred without success a claim to the dukedom of Montrose, conferred by James III. Alexander William Crawford, since 1869 Earl of Crawford and Balcarres, is author of Sketches of the History of Christian Art (1847); Scepticism (1861); On the Theory of the English Hexameter; Œcum-enicity in relation to the Church of England (1870); and (1849) Lives of the Lindsays, a family memoir (q.v.): see also Jervise, Land of the Lindsays.

LIND'SAY, or Lynd'say, Sir David, of the Mount: one of the best, and long the most popular of the older Scottish poets; said to have been b. abt. 1490; died before the summer of 1555; son of David L. of Garmylton, E. Lothian, whose grandfather was a son of Sir William L. of the Byres. Laing in his recent edition of Lyndsay (1871) notes the absence of evidence as to date of birth, Chalmers having apparently assumed it as a consequence of his supposition that the poet's father was 'David Lyndsay of the Mountht,' while Laing has shown that this was the poet's grandfather. The name 'Da Lindesay' occurs in the list of 'incorporated' students in St. Salvator's College, St. Andrews, for 1508 or 9: it may be that of the poet. It is not known when he entered the royal service, but 1511, Oct., he is found

taking part in a play acted before the court of King James IV. In the following spring, he was appointed 'keeper' or 'usher' of the prince, who, when little more than a twelvemonth old, became King James V.; and his verses preserve some pleasing traces of the care and affection with which he tended the king's infant years. His wife, Janet Douglas, had long the charge of the In 1524, the court fell under the power royal apparel. of the queen-mother and the Douglases, and L. lost his place; but four years afterward, when the Douglases were overthrown, L. was made lion king-at-arms, and received knighthood. In this capacity he accompanied embassies to the courts of England, France, Spain, and Denmark. He appears to have represented Cupar in the parliaments of 1542 and 3; and he was present at St. Andrews 1547, when the followers of the reformed faith called Knox to take upon himself the

office of a public preacher. He died childless.

The first collection of L's poems appeared at Copenhagen about 1553. They were republished at Paris or Rouen 1558; London 1566,75, and 81; at Belfast 1714; in Scotland 1568,71,74,88,92,97, 1604,10,14,34,48,96, 1709,20, This enumeration of editions shows L.'s great For nearly two centuries, indeed, he was popularity. what Burns has since become—the poet of the Scottish His works were in almost every house, his verses on almost every tongue. Like Burns, he owed part of his popularity, no doubt, to his complete mastery of the popular speech. But, like Burns, L. would have been read in whatever language he chose to write. His verses show few marks of the highest poetical power yet their merits are great. Their fancy is scarcely less genial than their humor, and they are full of good sense varied learning, and knowledge of the world. They are valuable now, if for nothing else than their vivid pictures of manners and feelings. In the poet's own day, they served a nobler purpose by preparing the way for the great revolution of the 16th c. It has been said that the verses of L. did more for the Reformation in Scotland than all the sermons of Knox. Like Burns, L. shot some of his sharpest shafts at the clergy. licentiousness that characterizes his verse must be attributed in part to the age in which he lived. liest and most poetical of his writings is The Dreme; the most ambitious, The Monarchie; the most remarkable in his own day, perhaps, was The Satyre of the Thrie Estaitis; but that now read with most pleasure, both for the charm of its subject and for its freedom from the allegorical fashion of the time, is The Historie of Squyer Meldrum. An admirable ed. of L's works is that of Chalmers (Lond. 1806, 3 vols); but in points of detail it is less accurate than that of David Laing (3 vols. 1879).

LINE, n. līn [F. ligne, a line—from L. linea, a line—from linum, flax: It. linea]: length without breadth; a string or cord; a lineament or mark in the hand or

face; outline; as much as is written from the one margin to the opposite one; a straight mark in writing; a single row; a series or succession; course or direction, as the line of a street; a short note; in poetry, a verse or part of a verse containing the number of feet in a measure; family ascending or descending; kind of business; twelfth part of an inch; a body of men in either one or two ranks drawn up in one row; stoppage or separation, as the line must be drawn somewhere: in math., a magnitude having only one dimension: V. to mark with lines. LI'NING, imp.: N. the act of marking with lines. LINED, pp. līnd: ADJ. traced out; striated. The LINE, the equator or equinoctial circle: also applied to the largest war-ships, as a ship of the line, that is, of the line of LINER, n. lī'nėr, one of a regular line of trading or passenger slips, generally steam-vessels. Lines, n. plu. līnz, intrenchments; a connected series of military works thrown up; delineation or outlines of the intended vessel supplied to the ship-builder; fundamental principles; boundary; place of abode; in Scrip., lot or destiny. CLOTHES-LINES, stretches of suspended ropes on which wet washed clothes may be hung to be dried. HARD LINES, unfortunate fate or lot. LINE OF BATTLE, disposition or order of ships or soldiers in an engagement. LINE-OF-BATTLE SHIP, formerly, a vessel fitted by its size, construction, and armament to take up a position in a naval engagement. Officers of the line: in the military, naval, and militia services of the United States, officers are classed as general, general staff, commissioned, non-commissioned, line, and warrant officers. Govs. of states, maj.gens., and brig.gens. of the army and state militia, and rear-admirals and commodores of the navy when commanding a squadron or a home or foreign station, appoint a certain number of staff officers to aid them in discharging their respective duties. The period of service of the staff is identical with the term of office (with govs.), or the term of the particular appointment or assignment. Commissioned staff officers are officers commissioned by the govt. or a state, and called to staff service by a superior officer, and during this service sometimes hold a higher than their actual rank. Non-commissioned staff officers are officers without commission, who for special reasons are tendered staff appointments. When an army battalion is drawn up in order of battle, the col. is in advance of the centre of the line, surrounded by his staff. In his rear stand the non-commissioned staff, and between them and the line of men stand the line officers stretched along the entire front; the adjt. on the extreme right, and then the lieut.col., junior maj., senior maj., and sergt.maj. (on the extreme left), in this order. In the navy, warrant officers are boatswains, gunners, carpenters, and sailmakers in the navy, whose promotion or reward for special services is by warrant, not commission. Since the close of the civil war, there has been dissatisfaction

in the navy over the rights and privileges of line and staff officers, and a bill was pending in congress (1890, April) to define more clearly the position of each class and to remove cause for future grievance. Troops of THE LINE, the regular cavalry and infantry regiments as distinguished from the guards, artillery, and engineers: 'the line' were probably so named as constituting the usual 'line of battle.' LINE MEN, men employed along the permanent way of a railway, etc. Horizontal LINE, a line drawn parallel to the horizon; a line lengthwise and level. Vertical line, the line standing upright, or at right angles to a horizontal line. PARALLEL LINES, lines equidistant from each other at all points. LINE OF BEAUTY, a certain curved line turned somewhat like an elongated letter S. Line of Defense, in mil., the line of fire of the flank of a bastion; the line of the face of a bastion produced until it meets the corner of the curtain angle; a particular method employed in argument in order to justify or to clear from guilt. LINE OF DEMARKATION, the line dividing the lands of different proprietors. Line of DIP, in geol., the direction in which strata dip or incline from the horizon, or from the level. Line of fire, the direction in which the shot from the guns of a battery are to be projected. LINE OF MARCH, course or direction taken, as by an army. LINE OF OPERATIONS, in mil., the different points operated upon, and over which an army passes in attaining its object. Line of sight, in mil., a line passing through the notch of the tangent scale, or of the backsight of a rifle, the fore-sight, and the object fired at. RIGHT LINE, the shortest line that can be drawn between two points. On the old methods or fundamental principles; in the same course or direction as before. To READ BETWEEN THE LINES, to see a meaning intended to be conveyed, not apparent to a casual reader, as if written with ink in the spaces between.

LINE, v. $l\bar{i}n$ [Gael. luain, the loins; lion, to fill; to replenish: comp. L. linĕa, a linen thread, a line of descent]: in prov. Eng. and Scot., to impregnate, applied to dogs, swine, horses, and other quadrupeds. Li'ning, imp. Lined, pp. $l\bar{i}nd$. Note.—This word may be a mere adaptation from Line 3.

LINE, v. $l\bar{i}n$ [prov. Sw. lina, to double a garment by putting linen inside: L. linum, flax, linen]: to cover the inside of a garment, originally with linen, but now with any other texture; to cover on the inside; to strengthen with a guard within; to strengthen with anything added. LI'NING, imp. covering on the inside: N. the inside covering of anything. LINED, pp. $l\bar{i}nd$, covered on the inside.

LINEAGE, n. lǐn'ĕ-āj [F. lignage, lineage—from mid. L. lineat'icum; F. ligne, a line-from L. linĕá, a line]: descendants in a line from a common progenitor; race; progeny: see Line 2.

LINEAL, a. lin'ĕ-äl [L. linĕālis—from linĕä, a line]: composed of lines, as lineal measure; of or relating to a line or length; in a direct line from an ancestor, e.g., as from father to son, grandson, etc.; hereditary. Lin'EALLY, ad. -lī. Lineament, n. līn'ĕ-ä-mĕnt [F. linéament—from L. linĕamen'tum, a drawing, a delineation]: feature; outline. Lin'EAMENTS, n. plu. -mĕnts, distinguishing marks in the form of the face. Lin'EAR, 2. -ĕ-ėr [L. linĕāris]: consisting of lines; having the form of lines; in bot., having very narrow leaves much longer than broad. Lin'EARLY, ad. -lī, with lines; in bot., applied to very narrow leaves in which the length greatly exceeds the breadth. Linear measures, those measures which have relation to length only. Linear perspective, that which regards only the forms, magnitudes, and positions of the objects delineated, in reference to the vanishing-point: see Line 1 and 2.

LINEATE, a. $lin'\bar{e}-\bar{a}t$ [L. $lin\bar{e}\bar{a}tus$, drawn in outline—from $lin\bar{e}\bar{a}$, a line]: in bot., applied to a leaf marked lengthwise with depressed lines. Lineolate, a. $lin'\bar{e}-\bar{o}-l\bar{a}t$, in bot., marked longitudinally with fine lines.

LINEN, n. lin'en [L. linum; Ger. lein; Icel. lin, flax: comp. Gael. lin, a thread of flax—from lion, flax or lint: W. llin: a cloth made of flax; underclothing; a general term for the sheets, table-cloths, towels, etc., of a houses ADJ. made of linen. LINEN-DRAPER, one who sell! linen cloth.—The manufacture of linen has reached its greatest perfection in France and the Netherlands, where the stimulus to produce fine yarns (see Spinning) for the lacemakers has turned such care and attention to the cultivation and preparation of flax, that in fineness of fibre they have been unequalled. The linens of France, Belgium, and Holland have long had high repute, and in lawn, the finest kind of linen-cloth made, the French are unrivalled. In the ordinary kinds of linen, British and American manufactures are rapidly improving, and will soon equal in quality the productions of continental competitors. Those of Ireland, especially, are remarkable for excellence, and this trade has become a very important one in that country; while in Scotland a large trade in the coarser and inferior kinds has located itself. The manufacture was introduced into the United States 1834 at Fall River, Mass. In 1870 there were only 10 linen manufacturing establishments in the country, with product reported at \$2,178,775. In 1900 there were 18 linen goods manufacturing establishments, using a capital of \$5,688,999, employing 3,283 hands, paying in wages \$1,036,839, using mat. worth \$2,550,517, and yielding prod. valued at \$4,368,159; 18 jute and jute goods estab., using a capital of \$7,027,293, employing 4,507 hands, paying in wages \$1,181,790, using mat. worth \$3,015,362, and yielding products valued at \$5,383,797; and several linen thread estab. Jute is now largely cultivated as a substitute for hemp and flax in the manufacture of low-

LINEOLA.

priced linen goods. The manufacture of linen in the United States is not making much progress, excepting in eoarse towelings and crash. The increase of cotton manufactures has threatened the prosperity of the linen trade, though the manufacture of linen continued to be one of the great staple industries of the world. The total annual value of the linen manufactures exported from the United Kingdom has for some years past averaged about £6,000,000. The imports of flax and flax manufactures into the United States for 1891 were valued at \$24,000,000; burlaps \$6,000,000.

The chief kinds of linen goods (for yarn, see Spin-NING) are: LAWN (Fr. linon), the finest of flax manufactures, formerly exclusively a French production, but very fine yarns are now made in Belfast, Armagh, and Warringstown; Camrric (q.v.); Damask (q.v.); Diaper (q.v.). Of the finer plain fabrics, Sheetings are important: they are largely made at Belfast, Armagh, and Leeds. Common Sheeting and Towelling are extensively manufactured in Scotland, particularly at Dundee, Kirkcaldy, Forfar, and Arbroath. Ducks, Huckabacks, Osnaburgs, Crash, and Tick (corrupted from ticken and dekken, Dutch for eover), are very coarse and heavy materials, some fully bleached, others unbleached, or nearly so: they are made in Seotland, the great seat of the manufucture being at the towns above mentioned. A few varieties of velvet and velveteen also are made of flax at Manehester, and much linen-yarn is used as warp for other materials.

Linen is one of the most ancient of all textile manufactures, at least, one of the earliest mentioned. The cerecloth, in which the most ancient mummies are wrapped proves its early and very extensive use among the Egyptians. It formed parts of the garments of the Hebrew as well as the Egyptian priests. Panopolis was the Belfast of the ancients, as, according to Strabo, the manufacture of linen was conducted chiefly there. wonderful durability of linen is evidenced by its existence on mummies, and by the remarkable fact mentioned by the German writer, Seetzen, and referred to by Blumenbaeh, that he had found several napkins within the folds of the eovering on a mummy which he unwrapped. and that he had them washed several times without injury, and used with great veneration 'this venerable linen, which had been woven more than 1700 years.' From the time of these ancient Egyptians up to the present period, the use of linen for elothing and other purposes has been continuous; and though the introduction and vast development of the cotton manufacture ehecked its consumption for a time, it has fully regained, and has indeed in some countries exceeded, its former proportions as one of the great staples.

LINEOLA, n. lǐn-ē'ō-la or -ā'ō-la [LL., dim. of L. linea]: in anat. and zool., a delicate line; especially, one of the lines on the distended breast where the lobes separate. Line-

LINER-LINGA.

OLATE, a. $lin'\bar{e}$ - \bar{o} -lat or - $l\bar{a}t$: minutely lineate.—Lineolet, n. -let: in entom., a delicate line. Lineolinear, a. - $lin'\bar{e}$ - $\bar{a}r$ [from L. linea plus linear]: in math., designating a function that is linear as to each of two sets of variables.

LINER, n. $l\bar{\imath}'n\dot{e}r$: I. A vessel belonging to a steamship line; one who draws or paint lines, as in decoration; a line-of-battle ship; in *Baseball*, a ball batted or thrown with force horizontally; a marble or ball that stops on a partition-line in a game. II. One who makes linings; a plain movable jar fitting inside an ornamental vessel; a long stone slab to which small stones are fastened to be polished; in mach., a thin piece placed between two others to adjust them, a shim; a lining, as of a cylinder, also a cylinder within another cylinder.

LING, n. *ling* [Icel. *ling*; Dan. *lyng*, any small shrub, heather]: common heather; heath; the *Callūna vulgāris*, ord. *Ericācĕæ*: see Heath.

LING, n. ling [Icel. langa, ling-from langr, long: Dan. lange; Dut. leng, a ling: Ger. lang, long], (Lota molva): fish of the cod kind, having a slender body and a flattish head. It is of the family Gadidæ, abundant on parts of the n. Atlantic coasts, especially of the German Ocean; found also on the banks of Newfoundland. In value it almost rivals the cod. In form, it is much more elongated than the cod, and even more than the hake, with which it agrees in having two dorsal fins and one anal fin, the anal and second dorsal long; but the genus differs in the presence of barbels, of which the L. has only one at the extremity of the lower jaw. The L. is generally 3 or 4 ft. long, sometimes 5 or 6 ft., and has been known to weigh 70 pounds. The color is gray, in-clining to olive; the belly, silvery; the fins edged with The tail-fin is rounded. The gape is large, and the mouth well furnished with teeth. The L. is very voracious, feeding chiefly on smaller fishes. It is also very prolific, and deposits its spawn in June, in soft oozy ground near the mouths of rivers. It is found chiefly where the bottom of the sea is rocky. Great numbers are caught in the same manner as cod, by hand-lines and long lines, on the coasts of Cornwall, the Hebrides, the Orkney and Shetland Islands, etc.; and are split from head to tail, cleaned, salted in brine, washed, dried in the sun, and sent to the market in the form of Stock-They are largely exported to Spain and other coun-The air-bladders or sounds are pickled like those The liver also yields an oil similar to cod-liver oil, which is used in lamps in Shetland and elsewhere .-The name L. is applied also to the Cobia, the Pacific cod, two Hakes, the Congo eel, and Burbot (q.v.).

LINGA, n. ling'gå [Sanskrit word which literally means a sign or symbol]: in the worship of the Hindus, the phallus, as emblem of the male or generative power of nature. The L. worship prevails with the S'aivas, or adorers of S'iva (see India, Hindu Religion). Origi-

LINGAN-LINGARD.

nally of an ideal and mystical nature, the worship has degenerated into the grossest practices; thus taking the same course as the similar worship of the Chaldwans, Greeks, and other pagan nations: see Grove. The manner in which the L. is represented is generally inoffensive—the pistil of a flower, a pillar of stone, or other erect and cylindrical objects, being held as appropriate symbols of the generative power of S'iva. Its counterpart is Yoni, or the symbol of female nature as fructified and productive. The S'iva-Purâna names 12 Lingas which seem to have been chief objects of this worship in India.

LINGAN, JAMES MACCUBIN: about 1752-1812, July 28; b. Md.: soldier. He obtained a commission in the army at the beginning of the revolutionary war; was engaged in the battles of Long Island, York Island, and Fort Washington; was taken prisoner in the latter fight, and confined a long time in a British prison-ship. He attained the rank of brig.gen, and after the war he was appointed collector of the port of Georgetown, D. C. In 1812 he aided in defending the office of the Federalist in Baltimore against a mob, and was killed in the jail where he had sought refuge.

LINGARD, ling'gerd, John, D.D., LL.D.: Roman Catholic historian of England: 1771, Feb. 5—1851, July 17; b. Winchester, of humble parentage. Being intended for the priesthood, he was sent to the English College of Douai, France, where he remained till that college, in common with most of the religious establishments of France, was broken up by the Revolution. The act called the Rom. Cath. Relief Act enabled Rom. Catholics to open schools in England and the Douai community was transferred to Crookhall, and ultimately to Ushaw, in Durham. L. continued attached to the college in its several migrations, though not always resident. In 1793, he accepted the office of tutor in the family of Lord Stourton; but in the following year he returned to complete his theological studies at Crookhall, where he entered into priest's orders, and in which he continued as prof. of philosophy, prefect of studies, and vice-pres., until 1810, when he was named president. In 1811, however, he accepted the humble cure of Hornby, near Lancaster, in which he continued to reside till his death. L.'s first important work was Antiquity of the Anglo-Saxon Church (Svo., 1806), reprinted 1810, afterward, in much enlarged edition (2 vols. 1845). This was the pioneer of what became eventually the labor of his life-History of England (6 vols. 4to), published at intervals, 1819-30; afterward 14 vols. Svo. 1823-31. This work, before the death of the author, had passed through six editions, the last (10 vols. Svo) 1854-5. From its first appearance, it attracted much attention, as being founded on original authorities and the result of much new research. It was criticised with considerable asperity in its polemical bearings; but the

LINGAYEN-LINGUAL.

author, in his replies, showed so much erudition, and so careful a consideration of the original authorities, that the result was to add materially to his reputation as scholar and critic. It won for itself a place as a work of original research, and though it bears unmistakable evidence of the religious bias of the author, yet there is evidence of a sincere desire to investigate and to ascertain the truth of history. In recognition of his great services, many honors were offered to him; and he received a pension of £300 from the crown.

LINGAYEN, *lēn-gâ-yĕn'*: town and cap. of Paugasinan, Luzon, Philippine Islands; 8 m. w. of Dagupan: has coast and land trade, being at converging point of several important highways; pop. (1899) 18,886.

LINGEL, 'n. ling'gël [L. lingŭlă; F. ligule, a little tongue]: a little tongue or thong of leather.

LINGEL, n. ling'gĕl [F. ligneul, shoemakers' threadfrom F. ligne; L. linĕă, a line]: shoemakers' thread.

LINGER, v. ling'ger [AS. lengra, longer—from lang, long: Icel. langr, long: Dut. lengen, to lengthen: F. languir, to droop, to linger (see Long)]: to delay; to loiter; to be slow in action or decision; to be protracted; to remain long in any condition; in OE., to delay the gratification of; to defer. Lin'gering, imp.: Adj. protracted; drawing out in time; delaying: N. a delaying; a remaining long. Lin'gered, pp.-gerd. Lin'gerer, n.-er, one who. Lin'geringly, ad.-li.—Syn. of 'linger': to lag; saunter; tarry; stop; hesitate; wait; remain; continue; protract.

LINGO, n. ling'gō [L. and It. lingua, tongue]: in slang, talk; language; speech.

LINGTHORN, n. ling'thorn [L. lingua, tongue, and Eng. thorn]: a British star-fish having five arms or rays.

LINGUADENTAL, a. ling'gwă-dĕn'tăl [L. lingua, a tongue, and dens or dentem, a tooth]: formed or uttered by the joint action of the tongue and teeth, as d and t: N. a sound formed by the tongue and teeth; the letter representing the sound.

LINGUA FRANCA, ling'gwä fräng'kä [It. Lingua Francése, tongue French]: corrupt Italian speech, mixture of Italian and French words and idioms, spoken chiefly in the coast towns of the Mediterranean.

LINGUAGROSSA, lĭn-gwâ-grŏs'sâ: town of Sicily, province of Catania, on the n.e. slope of Mount Etna, 1,725 ft. above the sea, 37 m. s.w. from Messina. The name is also frequently spelt Linguaglossa. Pop. about 9,000.

LINGUAL, a. ling'gwäl [L. linguālis—from lingua, tongue]: pertaining to the tongue; formed by the tongue. Lin'gually, ad.-li. Lin'guist, n.-gwist, a person skilled in languages. Linguis'tic, a.-gwis'tik, relating to languages, or to the affinities of languages. Linguis'tics, n. plu.-tiks, the science of languages; the general study of languages for the purpose of classification (see Phi-

LINGUET-LINK.

LOLOGY). LIN'GUIFORM, a. -gwï-fawrm [L. forma, a shape]: tongue-shaped.

LINGUET, n. ling'gët [F.]: a tongue; a languet; the piece of a sword-hilt which turns down over the mouth-piece of a scabbard.

LINGULA, n. ling'gū-lă [L. lingŭla, a little tongue]: genus of brachiopodous mollusca; exhibiting the remarkable peculiarity of a long fleshy pedicle supporting a bivalve shell, and passing between the beaks of the valves. They live attached to rocks in the seas of warm climates, particularly of the Indian archipelago and Polynesia. The genus is interesting, because, though few recent species are known, fossil species are numerous, and are found in the fossiliferous beds of Britain and other countries, whose seas now produce none of their congeners. Lin'gulate, a. -gū-lāt, tongue-shaped. Linguliform, a. ling-gū'lī-fawrm [L. forma, shape]: tongue-shaped.

LINIMENT, n. lin'i-ment [F. liniment—from L. linimen'tum, an ointment-from linere, to besmear], an oily composition for rubbing into the skin; a balsamic lotion. Liniments may be regarded, so far as their physical properties are concerned, as ointments having the consistence of oil, while, chemically, most of them are soaps —i.e., compounds of oils and alkalies. In consequence of their slighter consistence, they are rubbed into the skin more readily than ointments. Among the most important are: Liniment of Ammonia, popularly known as Hartshorn and Oil, prepared by mixing and shaking together solution of ammonia and olive-oil, and employed as an external stimulant and rubefacient to relieve neuralgic and rheumatic pains, sore throat, etc.: Soap Liniment, or Opodeldoc, whose constituents are soap, camphor, and spirits of rosemary, used in sprains, bruises, rheumatism, etc.: Liniment of Lime, or Carron Oil, which is prepared by mixing and shaking together equal measures of olive or linseed oil and lime-water; an excellent application to burns and scalds, named from its general employment for this purpose at the Carron ironworks: Camphor Liniment, camphor dissolved in oliveoil, used in sprains, bruises, and glandular enlargements. and not to be confounded with Compound Camphor Liniment, which contains considerable ammonia, and is a powerful stimulant and rubefacient: Opium Liniment. which consists of soap liniment and tincture of opium, much employed as an anodyne in neuralgia, rheumatism etc., and the Simple Liniment of the Edinburgh Pharmacopæia composed of four parts of olive-oil and one part of white wax, used to soften the skin and promote the healing of chaps.

LINING: see under LINE 3.

LINK, n. lingk [Icel. hlekkr, a chain: Norw. tekk, a link; lekkja, a chain: Dan. lænke, a chain: Sw, länk, a link: Ger. gelenk, a joint]: a single ring of a chain; any-

LINK-LINLITEGOW.

thing doubled and united at the ends; a single part of a connected series; a division of the chain used in surveying and land measuring, equal to 7.92 inches long; anything which serves to connect or bind: V. to unite or connect as by a link; to be joined or connected. Link'-ING, imp. Linked, pp. lingkt: Adj. connected by links. Link-motion, an apparatus for reversing steam-engines.

LINK, n. lingk [seemingly from Gris. liangia, a sausage from liar, a tie (see LINK 1)]: a sausage.

LINK, n. lingk [Dut. lonte or lompe, a gunner's match of twisted tow: Sw. lunta; Dan. lunte, a match]: a torch of pitched rope or paper. Link-boy, or Linkey, n. lingk'ki, the bearer of a light or torch in foggy weather, or in dark nights: see Linstock.

LINKÖPING, lin-chö'ping (old Norse Longaköpugar, later Liongakiöping): one of the oldest towns in Sweden, cap. of the læn of L.; on the Stänga, which here flows into Lake Roxen, 110 m. s.w. of Stockholm. In ancient pagan times it was a place of sacrifice. It is regularly built, with fine market-places and public squares, but the houses are mostly of wood. L. has three churches, of which the cathedral—a Gothic edifice of the 12th c., containing monuments of many illustrious personages—is one of the most beautiful in Sweden. L. has also a library of 30,000 vols. Its trade is considerable. Pop. (1880) 8,752; (1885) 11,284; (1891) 12,968.

LINKS, n. plu. lingks (Norw. lekk, a ring: prov. Sw. lynka; Icel. lykkja, a crook, a twist: Ger. lenken, to bend, to turn: Lith. linkes, bent]: in Scot., the windings of a river—the radical image of the word seeming to be a crook or bending; the rich lands among those windings; golf-grounds; flat ground on the sea-shore; any sandy, barren ground; locks of hair or curls.

LINLITHGOW, lin-lith'go, or West Lothian, lo'thian: county in Scotland, bounded n. by the Firth of Forth, having the counties of Mid-Lothian, Lanark, and Stirling on the e., s., and w. Its length, n. to s., is 20 m., breadth, e. to w., 15 m.; 127 sq. m., or 81,114 acres. The surface is irregular, but the hills are inconsiderable with the exception of one eminence 1,500 ft. The climate is changeable, but healthful. The soil is very varied, and, except along the borders of the Firth, there is little land of first quality. In some of the high grounds there is good pasture, also considerable unreclaimed moss. Excellent farming prevails here as in Edinburghshire and Haddingtonshire. There are few streams of any note, the Almond and Avon being the principal. The minerals are of considerable value. There is good freestone for buildg. There are several profitable colleries.
There are two royal burghs—Linlithgow, the county

There are two royal burghs—Linlithgow, the county town, and Queensferry. The other principal towns are Bathgate and Borrowstounness. This county is intersected with railways, and the Edinburgh and Glasgow Union canal traverses it. In 1674, the valued rent was

LINLITHGOW-LINNÉ.

£5,073. In 1811, the real rent was £88,745; and in 1881-2

it was, excluding railways and canals, £216,011.

The following are agricultural statistics for 1881: acres under rotation of crops and grass, 59,274; of which 1,450 acres of wheat, 4,874 acres of barley, 10,348 acres of oats, 655 acres of beans, 3.052 acres of potatoes, and 3,861 acres of turnips. Of live-stock, there were—horses employed in agriculture, 1,544; cattle, 10,078; sheep, 17,605; swine, 1,442. Salt is made in the county; and in the towns are tanneries, breweries, distilleries, and chemical works. There are some remains of Roman antiquities. Pop. (1881) 43,510; (1891) 52,789; (1901) 65,708.

LINLITH'GOW: market-town, and royal and parliamentary burgh of Scotland, chief town of the county of L.; on a small lake, 16 m. w. of Edinburgh. It is one of the oldest towns in Scotland, and, though much modernized, still contains many antiquated houses, and some ruins rich in historical association. The parish church of St. Michael's (built partly in the 15th and partly in the 16th c.), a portion of which is still in use, is a beautiful specimen of the latest Scottish Gothic. The palace, strikingly situated on an eminence which juts into the lake (of 102 acres), dividing it into two almost equal parts. is heavy, but imposing in appearance; was frequently the residence of the Scottish monarchs, and was the birthplace of Mary Queen of Scots, and of her father, James V. The earliest record of its existence is of the time of David I. (1124-53), and fragments of various ages are easily detected. The latest work is of the time of James VI. Pop. (1881) 3,913; (1891) 4,155.

LINNÆAN, a. *Un-nē'ăn*: pertaining to *Linnœus*, great Swedish naturalist, or to his system.

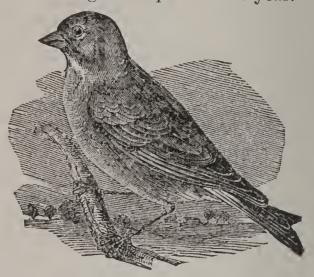
LINNÆ'US: see LINNÉ.

LINNÉ, l'in-n'i, Karl von (better known as Carolus LINNÆUS): one of the greatest of naturalists: 1707, May 13 (o.s.)—1778, Jan. 10; b. Rashult, in Smaland (Sweden), where his father was a country parson in very poor circumstances. His parents intended him for his father's profession, but he made little proficiency in the necessary classical studies. manifesting, however, from boyhood, the greatest love for botany. His father, disappointed, proposed to apprentice him to a shoemaker; but a friend, Dr. John Rothmann, physician at Wexiö, undertook for a year the expense of his education, and guided him in the study of botany and of physiology. In 1727, the young naturalist went to study medicine at Lund, and in the year following he went to Upsala, but during his attendance at the university he endured great poverty, being often dependent on chance generosity for a meal, and repairing his worn shoes with folded paper. Olaf Celsius received him at last into his house, and availed himself of his assistance in preparing a work on the plants of the Bible. He also won the favorable regard of Olaf Rudbeck, prof. of botany at Upsala, by a paper

in which he exhibited the first outlines of the sexual system of botany, with which his name must ever remain connected. Rudbeck appointed him curator of the botanic garden and botanical demonstrator. 24th year he wrote a *Hortus Vplandicus*. 1732, May-Nov., he travelled in Lapland, at the expense of the government: the fruits of his tour appeared in Flora Lapponica (Amst. 1737). He afterward spent some time at Fahlun, studying mineralogy, and there became acquainted with the lady whom he afterward married, the daughter of a physician named Moräus, who supplied him with the means of going to Holland to take his degree, which he obtained at Harderwyck 1735. In Holland, he became the associate of some of the most eminent scientific men of the time, and won high repute as a naturalist, developing original views which attracted much attention, while he eagerly prosecuted his researches in all departments of natural history. During his residence in Holland, L. composed and published, in rapid succession, some of his greatest works, particularly Systema Natura (Leyd. 1735), Fundamenta Botanica (Leyd. 1736), Genera Plantarum (Leyd. 1737), Corollarium Generum Plantarum (Leyd. 1737), etc. He visited England and France, and returned to Sweden, where, after some time, he was appointed royal botanist and pres. of the Stockholm Acad.; 1741, prof. of medicine in Upsala, 1742 prof. of botany there. The remainder of his life was spent mostly at Upsala in the greatest activity of scientific study and authorship. He produced revised editions of his earlier works, and numerous new works, a Flora Suecica (1745), Fauna Suecica (1746), Hortus Upsaliensis (1748), Materia Medica (1749-52), his famous Philosophia Botanica (1751), and Species Plantarum (1753), in some respects the greatest of all his works. In 1755, L. was invited by the king of Spain to settle in that country, but declined. In 1761 a patent of nobility was granted him by the Swedish government. His memory began to fail at the age of 60, and the last four years of his life were spent in great mental and bodily infirmity. L. was not only a naturalist of most accurate observation, but of most philosophical mind, and on this depended in great degree his almost unparalleled influence on the progress of every branch of natural history. Among the important services which he rendered to science, not the least was the introduction of a more clear and precise nomenclature. groups which he indicated and named have, in the great majority of instances, been retained amid all the progress of science, and are too natural ever to be broken up; while, if the botanical system which he introduced is artificial, L. himself was perfectly aware of this, and recommended it for merely temporary use till the knowledge of plants should be so far advanced that it could give place to a natural arrangement. See Botany.

LINNET.

LINNET, n. lin'nët [F. linotte, the linnet—from lin, flax: It. linosa, flax-seed, a linnet—named from feeding on linseed, the seed of flax], (Linota): genus of small song-birds of family Fringillidæ, nearly resembling the true finches, gold-finches, etc. The bill is short, straight, conical, and pointed; the wings long, and somewhat pointed; the tail forked. The species are widely distributed in the northern, temperate, and arctic regions, but much confusion has arisen concerning them, from the difference between the plumage of the breeding season and that of the greater part of the year. The Com-



Common Linnet (L. cannabina).

MON L. (L. cannabina), or GREATER REDPOLE (qu. Redpoll), is common in almost every part of the British Islands and of Europe, and extends over Asia to Japan. In size, it is about equal to the chaffinch. In its winterplumage, its prevailing color is brown, the quill and tail feathers black with white edges; in the nuptial-plumage, the crown of the head and the breast are bright vermilion color, and a general brightening of color takes place over the rest of the plumage. This change of plumage causes it to be designated the brown, gray, or rose L., according to the season of the year and the sex. is the Lintie of the Scotch. The sweetness of its song makes it everywhere a favorite. It sings well in a cage, and readily breeds in confinement; but the brightness of the nuptial-plumage never appears. The L. abounds chiefly in somewhat open districts, and seems to prefer uncultivated and furze-covered grounds. Its nest is very often in a furze-bush or hawthorn-hedge; is formed of small twigs and stems of grass, nicely lined with wool or hair; the eggs are four or five in number, pale bluish white, speckled with purple and brown. Linnets congregate in large flocks in winter, and in great part desert the uplands, and resort to the sea-coast.—The MEALY REDPOLE (L. canescens) is also a widely distributed species, and is found in n.w. parts of N. America, as well as in Europe and Asia, chiefly in very northern regions: it is rare in Britain. In size it is nearly equal to the common Linnet. By some, it is regarded as a

LINOLEUM.

larger variety of the Lesser Redpoll or Common Redpoll (L. linaria), common in Britain, though in s. England chiefly a winter visitant. The forehead, throat, and lore are black; in the spring-plumage, the crown of the head is deep crimson; the general color is brown of various shades. This species is common in all northern parts of the world, enlivening with its pleasant twitter and sprightly habits even the desolate wastes of Spitzbergen.—The only other British species is the Mountain L., or Twite (L. montium), found chiefly in mountainous or very northern districts. It is smaller than the preceding, has a yellowish bill, and never assumes the red color which marks the nuptial-plumage of other species.

LINOLEUM, n. lin-ōl'ĕ-ŭm [the lin, in linseed—from L. līnum, flax; and L. oleum, oil (see Lint and Linen)]: material for floor-cloths and artistic decorations, made from a mixture of oxidized linseed-oil and ground cork, rolled out upon a canvas backing. In 1849, Niclés and Rochelder independently discovered that chloride of sulphur will solidify oil, and render it usable in many new In 1859, Perra communicated to the Académie des Sciences the details of a mode of effecting this by mixing and melting the ingredients, and pouring the mixture out in a thin layer. By varying the proportions, the resulting substance assumes varying degrees of con-Thus, 100 linseed oil + 25 chloride of sulphur, produces a hard and tough substance; 100 oil + 15 chloride, a supple substance like india-rubber; and 100 oil + 5 chloride, a thick pasty mass. This third kind dissolves well in oil of turpentine. Frederick Walton, of England, afterward found that, by application of heat, linseed oil will become hard without the addition of chloride of sulphur: he conceives that it is not a mere drying, but a real oxidizing (see Lincrusta Wal-Linseed oil, first boiled, is applied as a layer to a surface of wood or glass, then dried; then another layer; and so on till the required thickness is produced. The sheet is then removed, and is found to be very much like india-rubber in elasticity; in fact, the production of a layer by this means is analogous to the smearing of clay-molds with caoutchouc juice to produce india-rubber, as practiced in S. America: see India-Rub-BER. Drying is a little expedited by adding a small portion of oxide of lead. The solid oil is crushed, and worked thoroughly between heated rollers; and, when treated either with shellac or with naphtha, it becomes applicable in various manufacturing forms. The term Linoleum applies properly to the hardened or oxidized oil itself; but it is used chiefly to designate one of the substances made from or with it, a kind of floor-cloth.
When the oxidized oil is rolled into sheets, it becomes a substitute for india-rubber or gutta-percha. When dissolved as a varnish or mastic, and applied to cloth, it is useful for waterproof textiles, felt carpets, carriage-

LINOTYPE-LINSEED.

aprons, wagon and cart sheets, nursing-aprons, waterbeds, tank-linings, table-covers, etc., according to the mode of treatment. As a paint, it is useful for iron, for wood, and for ships' bottoms. As a cement, it possesses some of the useful properties of marine glue. When vulcanized or rendered quite hard by heat, it may be filed, planed, turned, carved, and polished like wood, and used for knife and fork handles, moldings, etc. When brought by certain treatment to the consistency of dough or putty, it may be pressed into embossed molds for ornamental articles. When used as a grinding-wheel, touched with emery, it becomes a good cut-Lastly, when mixed with ground cork, pressed on canvas by rollers, the canvas coated at the back with a layer of the same oil in the state of paint, and the upper or principal surface painted and printed, it becomes the linoleum floor-cloth. Dunn's patented fabric for similar purposes has no oil in it: it is a mixture of corkshavings, cotton or wool fibres, and caoutchouc, spread upon a cotton or canvas back, and embossed with patterns; it is a kind of KAMPTULICON (q.v.).

LINOTYPE, n. lin'o-tip: type cast in solid lines. machine was patented by Otto Mergenthaler about 1882, and differs from Type-setting machines (q.v.) in that (1) type matrices take the place of separate type, (2) that it casts instead of sets the type. It is operated in the same manner as the typewriter, and with equal celerity. On pressing a given letter-key a matrix for forming that letter is dropped from its place and carried to the galley, and when the full column or page line is full, the matrices are switched off to the casting part of the machine, where the whole line is cast in a solid block of type-metal. The instant when the cast has been made, the matrices are switched off to a receiver and carried up an incline, and ultimately fall into their proper slots to be used again, and the cast line falls into a receptacle below the, casting-bed. This machine is in satisfactory use in several large publishing houses.

LINSEED, n., also Lintseed, n. lin'sed [lint and seed: AS. linsæd—from L. linum, flax]: seed of lint or flax; largely exported from the continent of Europe and from India, for making linseed oil and oil-cake; in order to which the seeds are first bruised or crushed, then ground, and afterward subjected to pressure in a hydraulic or screw press, sometimes without heat, and sometimes with the aid of a steam heat of about 200° F. Linseed oil is usually amber-colored, but when perfectly pure is colorless. It has a peculiar and rather disagreeable odor and taste. It is used chiefly in making varnishes, paints, etc. That made without heat (cold-drawn linseed oil) is purer, and less apt to become rancid, than that made with application of heat. By cold expression, the seed yields 18 to 20 per cent., and with heat 22 to 27 per cent. of oil. Linseed oil, boiled either alone or with litharge, white lead, or white vitriol, dries much more rapidly on exposure to the air than the unboiled oil; and

LINSEY-WOOLSEY-LINTON.

boiled or drying oil is particularly adapted for many uses.—Linseed cake, i.e., the oil-cake made in expressing linseed oil, is very useful for feeding cattle: it is largely exported from the continent of Europe: see Oil-Cake. Linseed itself is excellent food for cattle and for poultry. The seed coats abound in mucilage, which forms a thick jelly with hot water, and is very useful for fattening cattle.—Linseed meal, much used for poultices, is generally made by grinding fresh oil-cake, but it is better if made by grinding the flax-seed itself.

LINSEY-WOOLSEY, n. lin'zi-wûl'zi [corruption of linen and wool]: a stuff made of linen and wool mixed; a light coarse cloth: Add. made of linen and wool; poor; mean.

LINSTOCK, n. lin'stök [Dut. lontstok—from lont, a match; stok, a stick: Sw. luntstake; Dan. lunte-stok, a gunner's match—from Dan. lunte; Sw. lunta, a match; Dut. lompe, a rag, a match]: iron-pointed wooden staff, split or forked at one end, used in gunnery, for holding the lighted match in readiness to be applied to the touch-hole of the cannon. In old pictures, the L. is seen planted in the ground to the right rear of each piece, with a match smoking in each of the ends of the fork in which it terminates.

LINT, n. lint [AS. linet, flax, hemp—from lin, flax—from L. lintěŭm, linen]: linen scraped into a soft substance, or a soft woolen fabric of linen, used for dressing wounds or sores; the flax-plant; the Linum usitatis'simum, ord. Linācēæ: see Flax.

LINTEL, n. lin'tël [Sp. lintel; OF. lintel; F. linteau, the head-piece of a door or window—from mid. L. lintel'lus]: horizontal bearer or head-piece over doors, windows, and other openings in walls, usually either of stone or of wood; now sometimes of iron.

LINTON, lin'ton, WILLIAM JAMES: engraver and author: b. London, 1812. He studied drawing and engraving on wood; engraved the first illustrations for the London Illustrated News 1842; and became a founder of the London Leader 1851, and manager of Pen and Pencil 1855. In 1867 he removed to the United States, and after several years in New York settled in New Haven. He was an associate of the Nat. Acad. of Design, and a member of the Amer. Soc. of Painters in Water-colors. His best known engravings are in Jackson's History of Wood Engraving (London 1846-7); Works of Deceased British Painters (1860); Dr. Holland's Katrina (New York 1869); and William Cullen Bryant's Flood of Years (1878) and Thanatopsis (1878); and his literary works include Claribel and Other Poems (London 1865); The Flower and the Star (Boston 1878): Some Practical Hints on Wood Engraving and A Manual of Wood Engraving. D. His wife, ELIZA ANN L., b. Keswick, England, 1822, has been a writer for the press since 1846, and has published Azeth, the Egyptian (London, 1846): Witch

LIN TSEH-SU-LINUM.

Stories (1861); The Lake Country (1864); The True History of Joshua Davidson (1872); Patricia Kemball (1874); The World Well Lost (1877); My Love (1881); and Autobiography of Christopher Kirkland (1885).

LIN TSEH-SU: Chinese imperial commissioner: 1785-1850, Jan.; b. at Hing-hwa, province of Fuh-keen. At the village competitive examinations he succeeded in obtaining successively the degrees analogous to A.B. and A.M. became a doctor of laws and a member of the Hanlin College. When 30 years of age, he received his first official appointment as censor. As financial commissioner for Kiang-nan, in which province a famine was decimating the population, he succeeded in restoring prosperity. He was next appointed viceroy of the two provinces of Shen-se and Kan-su, where, as in Kiang-nan, he soon gained the affections of the people and the commendations of the emperor. New titles were showered upon him, and he obtained the signal honor of entering the imperial precincts on horseback. But now his brilliant progress was checked. had long urged stringent measures against the importers, dealers, and consumers of opium, the bane and scourge of his native land; and at the beginning of difficulties with Great Britain, he was appointed to deal with the growing evil. He arrived at Canton, invested with unlimited authority; but his forcible measures excited a war with Britain, and brought down upon himself the anger of his sovereign. He was banished to the region of Ele, where he busied himself in improving the agriculture of the country. He was soon recalled, and restored to more than his former honors. His death was the signal for general mourning throughout China, and the emperor ordered a sacrificial prayer to be composed, recording the illustrious deeds of the departed; an honor conferred only on persons of

L., besides thoroughly mastering the statistics and politics of China, gave much time to studying the geography and history of foreign countries, and to private literary study. He is ranked as one of the chief Chinese poets; and the style, literary merit, and logical order of his public documents are in contrast to the usual diffuse

and rambling style of Chinese state-papers.

LINTZ, lints: capital of the crown-land of Upper Austria, in a pleasant district on the right bank of the Danube, here crossed by a wooden bridge 838 ft. long; 100 m. w. of Vienna. It is a strongly-fortified, quiet town, and a bishop's seat, with numerous churches, benevolent institutions, and govt. offices. There are large imperial factories for carpets and other woolen goods; and cloths, cottons, cassimeres, fustians, leather, and cards are made. The navigation of the Danube occasions a lively trade. Steamboats ply daily up the river to Ratisbon, and down the river to Vienna. The women of L. are celebrated for beauty. Pop. (1900) 58,791.

LI'NUM: genus of plants: see FLAX.

LINUS-LION.

LINUS, lī'nŭs: presbyter of the church at Rome, who appears in the lists of Roman bishops as successor to the apostle Peter in the charge of that church. There is a probable conjecture (but certainty is lacking) that he is the L. mentioned II Tim. iv. 21. Irenæus (latter half of 2d c.) states that Peter and Paul, having founded the church at Rome, committed its bishopric to Linus. As the New Testament uses the term 'bishop' as synonymous with elder or presbyter, L.'s rank as one of the Roman pontiffs rests only on tradition. The chronology is confused, and the date of L.'s pastoral service (abt. 12 years) at Rome is variously given from A.D. 55-67 to A.D. 68-80.

LION, n. lī'ŏn [OF. leon; F. lion—from L. lĕōnem; Gr. leon, a lion: It. leone]: a very strong and fierce beast of prey (see below): a sign of the zodiac. Li'ons, n. plu. the objects of interest or curiosity, or the noted persons, LI'ONEL, n. -ĕl, a young lion. LI'ONESS, n. in a place. -ës, the female lion. Li'onize, v. -iz, to show the lions to, that is, the noted persons, and the principal objects of interest and curiosity; to treat as a lion or an object of interest. LI'ONI'ZING, imp.: ADJ. showing or inspecting the objects of interest and curiosity in a place. Li'onized, pp. -izd. Lion-hearted, courageous. SHARE, the whole or a disproportionate share. PROVIDER, the jackal; one who acts the foil to another man, that is, to show another to a better advantage. Note.—The expression 'to see the lions' dates from the times when the royal lions at the Tower of London, before the existence of the Zoological Garden or of menageries, were a London wonder, to visit which strangers were usually taken.

LYON (Felis leo): largest and most majestic of the Felidæ and of carnivorous quadrupeds. It is, when mature, of nearly uniform tawny or yellowish color, paler on the under-parts; the young alone exhibiting markings like those common in the Felidæ; the male has, usually, a great shaggy and flowing mane; and the tail, somewhat long, terminates in a tuft of hair. The whole frame is extremely muscular, and the foreparts in particular are remarkably powerful; giving, with the large head, bright-flashing eye, and copious mane, a noble appearance to the animal, which, with its strength, has led to its being called the 'king of beasts,' and to fancies of its noble and generous disposition, having no foundation in reality. A L. of the largest size measures about 8 ft. from the nose to the tail, and the tail about 4 ft. The lioness is smaller, has no mane, and is of lighter color on the under-parts. The strength of the L. is such that he can carry off a heifer as a cat carries a rat.

The L. is an inhabitant chiefly of Africa, though found also in some of the wilds of Asia, particularly in parts of Arabia, Persia, and India. It was anciently much

more common in Asia; and was found in parts of Europe, particularly in Macedonia and Thrace, according to Herodotus and other authors. It has disappeared from Egypt, Palestine, and Syria, in which it was formerly common. It is not found on the table-lands of Persia. The L. is not, in general, an inhabitant of deep forests, but rather of open plains, in which the shelter of occasional thickets may be found. The breedingplace is always in some secluded retreat, in which the voung—two, three, or four in a litter—are watched over with great assiduity by both parents, and, if necessary, are defended with great courage—though, in other circumstances, the L. is more disposed to retire from man than to assail or contend with him. When met in an open country, the L. retires at first slowly, as if ready for battle, but not desirous of it; then more swiftly; and finally by rapid bounds. If compelled to defend himself, the L. manifests great courage. The L. often springs upon his prey by a sudden bound, accompanied with a roar; and it is said that if he fails in seizing it, he does not usually pursue, but retires as if ashamed; it is certain, however, that the L. also often takes his prey by pursuing it, and with great perseverance. The animal singled out for pursuit, e.g. a zebra, may be swifter of foot than the L., but greater power of endurance enables him to make it his victim. Deer and antelopes are perhaps the most common food of lions. The L., like the rest of the Felidee, is largely a nocturnal animal; its eyes are adapted for the night or twilight rather than for It lurks generally in its lair during the day, and issues as night comes on, when its tremendous roar begins to be heard in the wilderness. It has a horror of fires and torehlights; of which travellers in Africa avail themselves, when surrounded by prowling lions at night, and sleep in safety. Lion-hunting is attended with danger-a wounded and exasperated L. becoming a most formidable adversary—but besides the necessity of it to farmers in s. Africa and other countries where lions abound, it has been found attractive to mere sportsmen from its excitement. The rifle has proved too mighty for the L., and lions rapidly disappear before the advance of civilization. In India, they are now confined to a few wild districts; and in s. Africa, their nearest haunts are far from Cape Town and from all the long and fully settled regions.

The L. is easily tamed, at least when taken young; and when abundantly supplied with food is very docile, learning to perform feats which excite the admiration of the crowds that visit menageries. Exhibitions of this kind are not, however, unattended with danger. Lions were made to contribute to the barbarous sports of the ancient Romans; a combat of lions was an attractive spectacle; and vast numbers were imported into Rome, chiefly from Africa, for the supply of the amphitheatre.

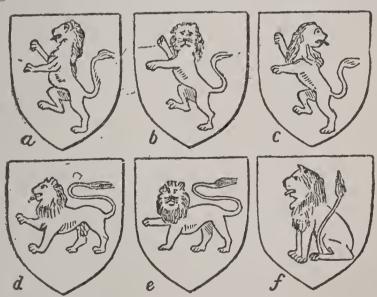
Pompey exhibited 600 at once.—Lions have frequently bred in the menageries of Europe, and a hybrid between the L. and the tiger has occasionally been produced.

The mane of the L. and the tuft at the end of the tail, are not fully developed till he is six or seven years old. The tail terminates in a small prickle, the existence of which was known to the ancients, and which was supposed by them to be a kind of goad to the animal when lashing himself with his tail in rage. The prickle has no connection with the caudal vertebræ, but is merely a little nail or horny cone, about two lines in length, adhering to the skin at the tip of the tail.

There are several varieties of the L., slightly differing in form and color, but particularly in the development of the mane. The largest lions of s. Africa are remarkable for the large size of the head and the great and black mane. The Persian and Asiatic lions generally are of lighter color, and inferior in size, strength, and ferocity to the African lion. Guzerat and s. Persia produce a somewhat smaller variety, remarkable as almost des-

titute of mane.

LION, in Heraldry: important among the animals borne in coat-armor. As early as the 12th c., the king of beasts was assumed as an appropriate emblem by the sovereigns of England, Scotland, Norway, Denmark, the native princes of Wales, the counts of Flanders and Holland, and various other European potentates. The L. occurs in different positions. 1. The earliest attitude of the heraldic L. is rampant (a), erect on his hind legs, and looking before him, the head being shown in profile, as he appears in the arms of Scotland, and originally did in those of England. This was the normal position of a lion; but as the royal animal came to be used by all who claimed kindred with royalty, and to be granted to favorite followers by way of augments.



tion, a diversity of attitude was adopted for distinction. 2. Rampant gardant (b), erect on the hind-legs, and af-

LIONCED-LIPARI ISLANDS.

fronté or full-faced. 3. Rampant regardant (c), erect on the hind-legs, and looking backward. 4. Passant (d), in a walking position, with the head seen in profile. 5. Passant gardant (e), walking, and with the head affronté. . 6. Passant regardant, walking, and with the head looking behind. 7. Statant, with all the four legs on the ground. 8. Saliant, in the act of springing forward on his prey. 9. Sejant (f), rising to prepare for action. 10. Sejant affronté, as in the crest of Scotland. 11. Couchant, lying down, but with his head erect, and his tail beneath him. 12. Dormant, asleep, with his head resting on his fore-paws. 13. Coward, or Coué, with his tail hanging between his legs. The L. passant gardant is often blazoned as the lion of England; and at a time when terms of blazonry were comparatively few, it was confounded with the Leopard (q.v.); hence the L. passant and rampart gardant came to be called respectively the lion-leopardé and leopard-lionné. Two lions may be depicted rampant combatant—i.e., face to face—or rampant addossé, placed back to back. Among leonine monsters are two-headed lions, bicorporate and tricorporate lions, lion-dragons, and lion-poissons. also the Bohemian lion, with two tails, and the more celebrated winged lion of St. Mark, adopted by the republic of Venice. The island republic bore, azure, a lion winged or sejant, holding between his forepaws a book open argent, in which are the words, Pax tibi Marce Evangelista meus. Two or more lions borne on one shield are sometimes (though never on a royal coat) blazoned Lioncels.

LIONCED, a. *lī'onsd*, or Leonced, n. *lē'onsd*: in *her*., adorned with lions' heads, as a cross the ends of which terminate in lions' heads.

LIP, n. lip [Dut. lip; Dan. läbe; Ger. lippe, a lip: L. labiŭm; Gael. liob; prov. Ger. labbe, lip, mouth—an imitative word]: one of the two edges or borders of the mouth; the edge of anything: V. in OE., to kiss. Lip'less, a. -lës, without lips. Lipped, a. lipt, having lips. Lip'let, n. -lët, a little lip. Lip-devotion, not a real attachment or devotion; mere words. Lip-labor, or Lip-service, labor or action of the lips which does not convey the sentiments of the heart; words without deeds. Lip-wisdom, wisdom in the words of the mouth only. To hang the lip, to drop the under lip, indicative of sullenness or contempt.

LIPÆMIA, n. *lip-ē'mī-ā* [Gr. *lipos*, fat]: a diseased state of the blood, characterized by the presence of many fatty particles; also the normal presence of fat in the blood after taking food.

LIPARI ISLANDS, *lip'a-rē* or *lē'pâ-rē*: group of 12 volcanic islands in the Mediterranean, lat. 38° 20′—38° 55′ n., long. 14° 15′—15° 15′ e.; on the n. coast of Sicily, and comprised in the dept. of Messina. The intense volcanic action induced the ancient classical poets to

LIPETZK-LIPOTHYMOUS.

localize in these islands the abode of the fiery god Vulcan—hence their ancient name, Vulcaniæ Insulæ.—Lipari, for extent and produce, is much the most important of the group: it is about 18 m. in circuit. Its finest products are grapes, figs, olives, and corn. It has large export trade in pumice-stone, sulphur, nitre, salammoniac, soda, capers, fish, and in Malmsey wine, largely manufactured for home and foreign trade. The warm springs in this island are much resorted to. The climate is delightful.—Lipari, the chief town, is a bishop's see, has two harbors, an episcopal palace, hospital, gymnasium, and a castle on a fine rock: pop. about 6,000. The island is almost wholly of pumice-stone, and supplies all parts of the world with that article. Besides Lipari, the principal islands are Vulcano, Stromboli, Salini, Panaria, Felicudi, Alicudi, and Ustica; Stromboli and Vulcano are actively volcanic.—Pop. of group about 17,350, of whom 7,542 belong to the island of L.

LIPETZK, *lē-pĕtsk'*: town in the s.w. of the govt. of Tambov, European Russia; on the right bank of the Voronetz, tributary of the Don. It was founded 1700 by Peter the Great, but did not flourish till the commencement of the present century, when the admirable qualities of its chalybeate springs became known. At present, it has a large annual influx of visitors during summer, for whose accommodation a bathing establishment and a splendid garden have been formed. L. has woolen manufactures. Pop. about 15,860.

LIPIC ACID, n. lǐp'ĭk ăs'ĭd [Gr. lipos, fat]: an acid produced by the action of nitric acid upon oleic acid.

LIPOGRAM, n. lī'pō-grăm [Gr. leipō, I leave; gramma, a letter]: species of verse characterized by the exclusion of a certain letter, either vowel or consonant. earliest author of lipogrammatic verse was the Greek poet Lasus (b. B.c. 538); and it is recorded of one Tryphiodorus, Græco-Egyptian writer of the same period, that he composed an Odyssey in 24 books, from each of which, in succession, one of the letters of the Greek alphabet was excluded. Fabius Claudius Gordianus Fulgentius, Christian monk of the 6th c., performed a similar feat in Latin. In modern times, the Spaniards have been most addicted to this laborious frivolity. Lope de Vega has written five novels, from each of which one of the vowels is excluded: several French poets also have practiced it.—See Henry B. Wheatley's book on Anagrams (1862). Li'pogrammatic, a. -grammăt'ĭk, pertaining to.

LIPOMA, n. *lī-pō'mă*, LIPOMATA, n. plu. *lĭ-pō'mă-tă* [Gr. *lĭpos*, fat]: the most common form of fatty tumor; fatty tumors or growths.

LIPOTHYMOUS, a. lī-pŏth'i-mŭs [Gr. leipō, I fail; thumos, mind or soul]: swooning; fainting. LIPOTH'YMY, n. -ĭ-mĭ, a swoon; a fainting.

LIPPE, līp'pė, usually LIPPE-DETMOLD, līp'pė-dět'molt: small principality of n. Germany, surrounded on the w. and s. by Westphalia, and on the e. and n. by Hanover, Brunswick. Waldeck, and a detached portion of Hesse-Cassel; 469 sq.m.; pop. (1900) 138,952, nearly all belonging to the Reformed Church, and well educated. present constitution of L. dates from 1853, Mar. 15. cap. is Detmold (q.v.), other towns are Lemgo and Horn. The famous Teutoburg-Wald (Saltus Teutoburgenis), in which the legions of Varus were annihilated by Arminius (see Germanicus Cæsar), traverses the s. part of the principality, which is on the whole rather hilly, but has many fertile valleys. The largest river is the Werre, tributary of the Weser. The principal occupation of the inhabitants is agriculture, and the rearing of cattle, sheep, and swine; much care is bestowed on the cultivation and management of forests, as L. is perhaps the most richly wooded district in Germany. weaving is the chief manufacturing industry. Among mineral products are marble, iron, lime, and salt. The princes of L. are one of the oldest sovereign families of Germany, and were flourishing as early as the 12th c. The first who took the name of L. was Bernhard von der Lippe, 1129. The family split into three branches 1613 —Lippe, Brake, and Schaumburg.

LIP'PE-SCHAUM'BURG: see SCHAUMBURG-LIPPE.

LIPPI, lēp'pē, FILIPPINO FILIPPO; commonly called FILIPPINO LIPPI, or LIPPINO LIPPI, lep-pe'no lep'pe: painter: 1460-1505, Apr. 13; b. Florence; natural son of Fra Filippo L. and Lucrezia Buti. It is said that he studied under Fra Diamante, his father's pupil. afterward studied under Sandro Botticelli, also a pupil of his father, and one of the most celebrated of his school. L. soon acquired high reputation, and executed various works in Florence, Bologna, Genoa, Lucca, and at Rome, where, 1492, he painted some frescoes for Cardinal Caraffa, in the church of Sta Maria Sopra Minerva. But his high position is proved principally by his works in the Brancacci Chapel in the church of the Carmine at Florence. The frescoes in this chapel have always been held in high estimation; they have been studied by the most celebrated painters, among others by Raphael and Michael Angelo; and though the series were long believed to be the work entirely of Masaccio, they are now ascertained to have been commenced by Masolino, continued by Masaccio, and finished by Filippino; the works of L. being—The Restoring of a Youth to Life, part of which was painted by Masaccio; The Crucifixion of St. Peter; St. Peter and St. Paul before the Proconsul, and St. Peter Liberated from Prison; also, according to some, St. Paul visiting St. Peter in Prison, in which the figure of St. Paul was adopted by Raphael in his cartoon of Paul Preaching at Athens. died at Florence.

LIPPI-LIPPSTADT.

LIP'PI, FRA FILIPPO: Florentine painter of great talent: 1412-1469, abt. Oct. 8; b. Florence; son of a butcher. Vasari describes his life as one of curious and romantic adventure: the account is not fully accepted by modern biographers, yet is not shown improbable. was left an orphan at an early age, and spent his youth as a novice in the convent of the Carmine at Florence, where his talent for art was developed. While sailing for pleasure he was seized by corsairs, and carried to Barbary; after several years of captivity, he regained his liberty, and 1438, was painting at Florence. L. was much employed by Cosmo de' Medici, and executed many important works for him. While painting in the convent of Sta Margarita at Prato, a young lady, Lucrezia Buti, a boarder or novice, who had been allowed by the nuns to sit for one of the figures in his picture, eloped with him; and though strenuous efforts were made by her relations to recover her, he successfully resisted their attempts, supported, it is thought, by Cosmo; and she remained with and had a son by him, who became an artist perhaps even more celebrated than L. himself. He died at Spoleto, being at the time engaged with Fra Diamante, one of his pupils, in painting the choir of the cathedral.

LIPPINCOTT, lip'in-kot, SARA JANE (CLARKE): author: b. Pompey, N. Y., 1823, Sep. 28. She was educated in Rochester, N. Y., removed to New Brighton, Penn., 1842, and married Leander K. L., of Philadelphia, 1853. In 1844 she began contributing verses to the New York Mirror, under the pen name of Grace Greenwood, which she has continued to use. She has made two extended European tours, contributed frequently to the New York Times and other periodicals, been active in anti-slavery and social reform, edited The Little Pilgrim, juvenile magazine, for many years; and delivered numerous lectures and addresses. Her published works include Greenwood Leaves (Boston 1850); History of My Pets (1850); Poems (1851); Recollections of My Childhood (1851); Haps and Mishaps of a Tour in Europe (1854); Merrie England (1855); Forest Tragedy and Other Tales (1856); Stories and Legends of Travel (1858); History for Children (1858); Stories from Famous Ballads (1860); Stories of Many Lands (1867); Stories and Sights in France and Italy (1868); Records of Five Years (1868); New Life in New Lands (1873); and Victoria, Queen of England (1883). In 1889, Nov., she contributed to the New York Herald an article on the Italian method of petrifying the dead.

LIPPSTADT, *lip'stât*: town of Prussian Westphalia, on the left bank of the Lippe, 78 m. n.e. from Cologne. Formerly belonging to Lippe, it became finally Prussian 1851. It has considerable grain trade, and some manufactures of starch, brandy, woolen cloth, etc. Pop.11,504.

LIPTO, *lip'tō*: county of Hungary, watered by the Waag, tributary of the Danube: 872 sq. m. Agriculture and cattle-raising are chief occupations; there are mines of iron, copper, silver, and gold. Pop. about 74,760.

LIQUATION, n. lī-kwā'shŭn [F. liquation—from L. liquātīōnem, a melting—from L. liquātus, made liquid, melted]: the act or operation of melting or sweating out; the capacity of being melted (see Eliquation). Liquefaction, n. līk'wĕ-fāk'shŭn [L. factus, made or done—from factō, I make]: the act or operation of melting or dissolving; the state of being dissolved. Liquefaction of Gases (see Gases). Liquefaction. Liquefaction, a medicine which promotes liquefaction. Liquefy, v. līk'-wĕ-fī [F. liquéfier—from L. līquifīĕrī, to become liquid]: to melt or make liquid; to change a solid into a fluid; to be melted. Liquefying, imp. -fī-ing. Liquefier, pp. -fīd. Liquefier, n. -fī-ēr, that which liquefies or melts. Liquefieriable, a. -fī'-ă-bl, that may be melted.

LIQUESCENT, a. *lĭ-kwĕs'ĕnt* [L. *liquescen'tem*, becoming fluid, melting—from *liquērĕ*, to be fluid]: melting; becoming fluid—more frequently *deliquescent*.

LIQUEUR, n. lē-kėr' [F. liqueur—from L. liquōrum, a liquor (see Liquor)]: compound of water, alcohol, and sugar, flavored with some aromatic extract; a cordial; name given to a great variety of foreign compounded spirits, indeed to any alcoholic preparation flavored or perfumed and sweetened to be more agreeable to the taste. The following are the principal liqueurs: Aniseed Cordial, weak spirit flavored with aniseed, coriander, and sweet fennel seed, and sweetened with finely clarified syrup of refined sugar. Absinthe (q.v.) strong spirit flavored with the young tops of certain species of Artemisia (q.v.). Clove Cordial (much sold in London ginshops) flavored with cloves, bruised, and colored with

burned sugar. Kümmel, or Doppel-Kümmel, is the principal L. of Russia; it is made in the ordinary way with sweetened spirit, flavored with cumin and caraway seeds, the latter usually so strong as to conceal any other flavor. There are two qualities: that made in Riga is in common use, and is not the finest; the better sort is manufactured only in smaller quantities at Weissenstein, in Esthonia; the chief difference is in the greater purity of the spirit used. Maraschino is distilled from cherries bruised, but instead of the wild cherry, a fine delicately-flavored variety, called Marazques, grown only in This cherry is largely cultivated Dalmatia, is used. around Zara, the capital, where the L. is chiefly made. Great care is taken in the distillation to avoid injury to the delicate flavor, and the finest sugar is used to sweeten it.

Noyau, or Crême de Noyau, is a sweet cordial flavored with bruised bitter-almonds. In Turkey, the fine-flavored kernels of the Mahaleb cherry are used, and in

LÎQUID-LIQUIDAMBAR.

some places the kernels of the peach or the apricot. Peppermint, is a common L., especially among the lower classes of London, where very large quantities are sold; it usually consists of ordinary sweetened gin, flavored with the essential oil of peppermint, which is previously rubbed up with refined sugar, and formed into an oleosaccharum, which enables it to mix with the very weak spirit.—See also Curacoa: Kirschwasser.

LIQUID, n. lĭk'wĭd [F. liquide, liquid—from L. liquĭdus, flowing, liquid—from liqueo, I melt]: any substance flowing or capable of flowing (see Heat: Hydrostatics: Fusing and Freezing Points): a letter which has a smooth flowing sound; the liquids are m, n, l, r, so named because the letters flow smoothly from the mouth combined with other letters, as in brave, slave, smooth, sneer: see Letters and Articulate Sounds (Liquids): Adj. fluid, or capable of flowing; in the form of water; soft; smooth. Liq'uidly, ad. -lī. Liquidate, v. līk'wī-dāt [mid. L. liquidātus, clarified, made clear]: to clear away gradually, as a debt; to settle or adjust; to pay; to diminish or lesson. LIQ'UIDATING, imp. LIQ'UIDATED, pp. settled; paid. LIQUIDATED DAMAGES, definite sum fixed by an agreement, as damages to be paid by the party violating the agreement (see Damages). Lio'ui-DATOR, n. -dā-ter, one who adjusts and settles. Lio'uida'-TION, n. -dā'shun [F.—L.]: the act or process of clearing away or diminishing gradually; the act of adjusting and settling debts. Liquidity, n. līk-wīd'ī-tī, or Liq'uid-ness, n. -nēs, quality of being fluid or liquid; thinness. Liquidize, v. lik'wid-iz, to reduce to a liquid state. Lig'-UIDI'ZING, imp. LIQ'UIDIZED, pp. -īzd.



Liquidambar.

LIQUIDAMBAR, lik'wid-am-ber, or Liquid Amber, or Sweet Gum: genus of trees of nat. ord. Altingiaceæ,

LIQUOR-LIQUOR LAW.

the only genus of the order; having flowers in male and female catkins on the same tree, the fruit formed of 2-celled, many-seeded capsules, and the seeds winged. They are tall trees, remarkable for fragrant balsamic products. L. styracifiua, the AMERICAN L., or SWEET GUM tree, is a beautiful tree with palmate leaves, native of Mexico and the United States. It grows well in Britain. Its wood is of hard texture and fine grain, and makes good furniture. From cracks or incisions in the bark, a transparent, yellowish balsamic fluid exudes, called Liquid Liquidambar, Oil of Liquidambar, American Storax, Copalm Balsam, and sometimes, but erroneously, White Baksam of Peru. It gradually becomes concrete and darker colored. Its properties are similar to those of storax. That of commerce is brought mostly from Mexico and New Orleans.—L. Orientale, smaller tree with palmate leaves, is native of the Levant and of more eastern regions, and yields abundantly a balsamic fluid, supposed to be the Liquid Storax imported from the Levant, but on this point there is diversity of opinion.

LIQUOR, n. līk'ėr [L. liquor, a fluid—from liqueo, I melé: F. liqueur]: a fluid; intoxicating liquid, generally applied to spirits (see Temperance: Total Abstinence: Prohibition of the Liquor Traffic: License): a fluid extract: V. to take intoxicating drinks—an Americanism, and a slang expression. Liquoring, imp. Liquored, pp. līk'ėrd. In Liquor, intoxicated. Liquor sanguinis, līk'ėr săng'gwin-is [L. sanguinis, of blood]: liquor of the blood; the transparent colorless fluid part of the blood, in which the corpuscles float; plasma.

LIQUORICE: see Licorice.

LIQUOR LAW, THE RAINES: law for regulating liquor traffic in N. Y., prepared by state-senator John Raines, passed by the legislature 1896, Mar. 12, by republican majorities on a close party vote in both houses. Its special feature is the same as that of the Dow law of Ohio, the issuing of a certificate of payment of tax in place of a specific license to sell, the effect of which is in practice to preclude any consideration by the commissioners of the character of the applicant, or of recommendations or protests against issuing the certificate, it being held that where the required tax is tendered, the commissioners have no The annual tax on an ordinary liquor saloon is in New York city \$800; Brooklyn, \$650; all cities with pop. between 500,000 and 50,000, \$500; between 50,000 and 10,000, \$350; between 10,000 and 5,000, \$300; between 5,000 and 1,000, \$200; all other places, \$100. Sunday opening or selling is forbidden to saloons, and screens must be removed from doors and windows, so as to allow unobstructed view through the saloon from the street. No new liquor shop can be opened in a residence district without consent of two-thirds of the property-owners. Local option is forbidden to cities, but is granted to towns. One-third of the net proceeds of the tax goes into the state treasury and two thirds to the cities, counties, and towns

LIRA-LIROCONITE.

where levied. As the law allows Sunday sales of liquor by hotels with meals, and as the courts decided that the possession of ten rooms constituted a house a hotel, and that a sandwich constituted a meal, numerous saloons added rooms to make the requisite number and by delivering a sandwich with each sale, carried on a practically unlimited Sunday trade—the so-called 'Raines law hotels.' As clubs were exempted, numerous spurious clubs were formed. At the next session of the legislature (1896–97) amendments were adopted to restrain these abuses. The total tax collected during the fiscal year 1897 was \$12,008,814.63.

LIRA, le'ra [Lat. libra (see LIVRE)]: Italian silver coin of greater or less value according to time and place. The Tuscan L. was equal to 80 French centimes; the Austrian L. or zwanziger was about the same value. The present L. Italiana, or L. nuova, of the Italian kingdom is equal to the French franc (19 cents 3 mills) and is

divided into 100 centimes.

LIRELLA, n. lǐr-ĕl'lă [L. dim. of lira, a ridge of land]: in bot., the sessile linear apothecium of lichens. Lirellate, a. lǐr-ĕl'lāt, like a furrow; also Lirelliform, a. lǐr-ĕl'lī-fawrm [L. forma, shape]: formed like a furrow.

LIRIA, $l\bar{e}'r\bar{e}\hat{a}$: town of Spain, province of Valencia, 12 m. n.w. from Valencia. The plain in which it stands is luxuriant with vines and olives. On the summit of a hili in the vicinity is the *Collegio de San Miguel*, an ancient and venerable monastic pile. Pop. 9,500.

LIRIODEN'DRON: see TULIP TREE.

LIROCONITE, n. *lī-rŏk'ō-nīt* [Gr. *leiros*, pale; *kŏnĭā*, dust]: a hydrated arseniate of copper, occurring in several copper-mines in obtuse pyramidal crystals of a sky-blue or verdigris-green color.

LISBON, a. liz'bon: of or from Lisbon, capital of Portugal.

LISBON, līz'bon (Portug. Lisboa; called by the ancient Lusitanians, Olisipo or Ulisippo, and by the Moors Lishbuna): capital of Portugal, province of Estremadura, on the right bank of the Tagus, which is here about six m. wide; about 18 m. from the mouth of the river. (1900) with the suburos of Belem and Olivaes, 708,750. The city is built partly on the shores of the Tagus, and partly on seven hills. Its appearance is wonderfully picturesque; and it resembles Constantinople in point of situation and magnificence of prospect. Including its suburbs, it extends about five m. along the river. harbor, safe and spacious, is protected by strong forts, but the city itself is unwalled and without fortifications. The e. and older part, around the Castle-hill—an eminence crowned with an old Moorish castle, ruined by earthquakes—is composed of steep, narrow, crooked, badly-paved streets, with high, gloomy, wretched-looking houses; but the newer portions are well and regu-The most beautiful part is the New Town larly built. along the Tagus, and is crowded with palaces. Among the places or squares, the principal are the Praco do Commercio, on the Tagus, 565 ft. long, 520 broad, surrounded on three sides with splendid edifices; the Praço do Rocio, in the New Town, forming the market-place, 1,800 ft. long, and 1,400 broad; and the Passeio Publico. The whole of the New Town, and the district round the royal castle is lighted with gas. L. has 70 parish churches, 200 chapels, numerous monasteries, hospices, and hospitals, 6 theatres, and 2 amphitheatres. The most conspicuous public buildings are the Church of the Patriarch, the Monastery of the Heart of Jesus (with a cupola of white marble), the Church of St. Roque (of marble), the Foundling Hospital (receiving annually about 2,000 children), Hospital of S. José (capable of accommodating 900 patients), the royal palaces of Ajuda, Nossa Senhora das Necessidades, and Bemposta, the custom-houses, the arsenal, and the National Theatre on the site of the old Inquisition. The city has numerous educational and scientific institutions, and a National Library of 160,000 vols. Among notable objects, the most important is the Alcántara Aqueduct, Os Arcos, or Aguas livres, finished 1743, which supplies all the public fountains and wells of the city. It is 18 m. in length, and in one place 260 ft. high, and remained uninjured at the great earthquake. It has long been deemed the greatest piece of bridge-architecture in the world. L. has a royal arsenal, ship-building docks and powder-mills, besides private manufactories of silks, porcelain, paper, and soap; also iron-foundries, and jewelry and trinket establishments. Its chief exports are oranges, citrons, wool, oil, and leather. The shipping accommodation is extensive and commodious, and the trade with Africa is important and flourishing. Imports (1887) were valued

LISBURN-LISLE.

at more than \$30,000,000; exports over \$18,000,000. About 35,000 Galegos (Galicians) earn a subsistence here as porters, water-earriers, and laborers.

L. is said to have been founded by the Phœnicians, and was a flourishing city, cap. of Lusitania, when first visited by the Romans. It was taken by the Moors 712, from whom it was recaptured by Alfonso I. 1147. It became the seat of an archbishoprie 1390, and of a patriarchate 1716. L. has been frequently visited by earthquakes; that of 1755 destroyed a great part of the city and 60,000 inhabitants. L. was captured by the French 1807, but given up to the British 1808, after which it was protected by the fortified lines of Torres Vedras.

LISBURN, lis'bern: market-town on the river Lagan, partly in the county of Antrim, partly in that of Down, Ireland. It is 97 m. n.n.e. from Dublin, 8½ s.s.w. from Belfast, with both which places it is connected by the Dublin and Belfast Junction railway. L. originated in the erection of a castle, 1610, by Sir Fulk Conway, to whom the manor was assigned in the settlement of James I.; but its importance dates from the settlement of a number of Huguenot families, who, after the revocation of the Edict of Nantes, established themselves at L., where they introduced the manufacture of linen and damask, after the method and with the machinery in use in the Low Countries. It is a clean and well-ordered town, with a convenient market, and eonsiderable manufactures of linens and damasks; besides which, bleaching, dyeing, flax-dressing, flax-spinning, etc., are carried on. Its parish church is the cathedral of Down and Connor, and is interesting as the burial-place of Jeremy Taylor, who was bp. of that see, and died at L. 1667. Pop. (1871) 9,326; of whom 4,708 were Prot. Episc., 2,146 Rom. Cath., 1,841 Presb., and 369 Meth.; (1891) 9,517.

LISIEUX, $l\bar{e}$ - $z\bar{e}$ -eh' (ane. Noviomagus Lexovium): town of n. France, dept. of Calvados, on the Touques, 27 m. e.s.e. of Caen, at the entranee of a beautiful valley. The principal building is the church of St. Pierre (formerly a eathedral), dating from the 13th c., and built on the site of an older edifiee, in which Henry II. of England married Eleanor of Guienne. L. is the eentre of extensive manufacture of eoarse linens, woolens, flannels, horse-cloths, ribbons, etc., employing more than 3,000 workmen. Pop. (1881) 16,039; (1891) 16,260.

LISKEARD, *lis-kârd'*: municipal borough in Cornwall, England; in a well-cultivated district, on the Looe, 16 m. w.n.w. of Plymouth. Two m. s. of the town is a famous spring, said to have been presented to the inhabitants by St. Keyne, and the virtue of whose waters is set forth in Southey's ballad, *The Well of St. Keyne*. There are manufactures of serge and leather, and traffic in the product of the tin, copper, and lead mines of the vicinity. Pop. (1871) 6,575; (1881) 5,591; (1895) 3,984.

LISLE, GUILLAUME DE: see DE LISLE, GUILLAUME.

LISLE THREAD—LIST.

LISLE THREAD: see LILLE (town in France).

LISMORE, *liz-mor'*: island of Argyleshire, Scotland, six m. from Oban: it is in Loch Linnhe, and is 10 m. long, with average breadth of $1\frac{1}{2}$ m. It contains the remains of several interesting buildings, as Achinduin Castle—formerly the residence of the Bishops of Argyle—an old cathedral, and Castle Rachal, a Scandinavian fort, now very ruinous. The island is mostly under cultivation. Pop. 1,860.

LISP, v. *lisp* [Dut. *lispen*; Sw. *läspa*, to lisp, to speak imperfectly: an imitative word]: to speak with the tongue against the teeth or gums in such a way as to make s or z sound th—most common among children; to utter feebly or imperfectly, as a child: N. the imperfect utterance of s or z. Lisp'ing, imp.: Add. uttering with a lisp: N. the act of speaking with a lisp. Lisped, pp. *lispt*. Lisp'ingly, ad. -li, in a lisping manner; imperfectly; affectedly. Lisp'er, n. -er, one who lisps.

LIS PENDENS, *lis pën'denz* [Lat. lawsuit pending]: in *Law*, a pending suit. In a suit at law pendency begins soon as an attachment is made under the writ; at equity, as soon as the subpæna is served on the defendant.

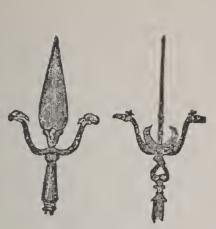
LISPUND, n. lis'pund [Dan. and Sw. lispund; Icel. lippund]: weight in use in Denmark, Sweden, etc., and varying in different countries from 14 to 18 lbs. avoirdupois.

LIS'SA (anc. *Issa*): Austrian island in the Adriatic, belonging to Dalmatia; 10 m. long, 5 broad; 38 sq. m. It has steep shores and an unfertile soil. Here the British defeated the French 1811, and the Austrians defeated the Italians under Admiral Persano. It has two fortified harbors. Pop. abt. 7,000.

LISSA, *līs'sâ* (Pol. *Leszna*): town of Prussia, province of Posen, and circle of Fraustadt, 44 m. s.s.w. of Posen. L. has a fine townhouse, a castle, one Rom. Cath. and three Prot. churches, with manufactures of woolens, leather, and tobacco. This place was for a time the chief seat of the Bohemian Brothers.—Pop. (1885) 12,109, nearly one-half Jews.

LISSOM, or Lissome, a. lis'sŭm [see Lithe]: a colloquial form of Lithesome; supple; elastic; free.

LIST, n. *list* [Dut. *lijst*, border, catalogue: Icel. *lista*, border of cloth: It. *lista*, any kind of list or selvage, a border about a garment, the lists of tilting, a row or rank of anything set in order: Ger. *leiste*, border, a stripe]: a strip on which is written a row of names; a catalogue; a roll or register; a schedule; the border of cloth; ground inclosed for a race or combat, generally in the plu. Lists: V. to cover with list, as the side of a door or window; to register; to enroll; to engage for the public service, as soldiers by entering the names in a list or register—usually written *enlist*. List'ing, imp. List'ed, pp.: Add. party-colored in long streaks; inclosed for tournaments;



Linstocks.



Head of Gambian Lion (Felis leo gambianus).



Head of Maneless Lion (Felis leo goojratensis).



Lionced.



Lobate Foot of Grebe (Podiceps).



Loach.



Lochaber Ax.



Loculicidal Dehiscence: v, Valves; d, Dissepiments; c, Axis.

engaged in the public service; enrolled. List, or Listel, n. list'el, in arch., a little square molding; a fillet (q.v.). To enter the lists, to engage in combat, or in a controversy. Civil list, the servants of government, not military, as judges, ambassadors, secretaries, etc., or the money appropriated for their support—now usually applied only to the reigning sovereign's household expenses.

LIST, n. *list* [F. *liste*]: a white band across a horse's forehead; a band; a strip of cloth: see List 1: also FILLET.

LIST, v. *list* [AS. *lystan*, to have pleasure in, to raise desire: Dan. *lyste*, to desire: Icel. *lyst*, pleasure, desire; *lysta*, to desire: Dut. *lusten*, to like: connected with Lust, which see]: to choose; to desire; to be disposed: N. desire; pleasure; in *OE.*, *impersonally*, it pleased: N. in *OE.*, desire; willingness. List'ing, imp. List'ed, pp. List'less, a. -les, denoting the condition of one who has no pleasure in his work, and who therefore acts without energy; heedless; uninterested; careless. List'lessly, ad. -li. List'lessness, n. -nes, heedlessness; carelessness; indifference to what is passing.—Syn. of 'listless': supine; thoughtless; inattentive; vacant; indifferent; weary; languid; indolent; disinclined.

LIST, v. list: a contr. for Listen, which see.

LISTEN, v. lis'n [AS. hlystan, to listen: Icel. hlust, an ear; hlusta, to listen: Dut. luysteren, to whisper, to listen]: to hearken; to give ear; to obey; to attend. Listening, imp. lis'ĕn-ing: Add. giving attention: N. the act of listening or giving attention. Listened, pp. lis'ĕnd. Listener, n. lis'ĕn-er, one who listens.

LISTER, lis'ter, Joseph, f.R.S.L., D.C.L., LL.D., Lord: surgeon: 1827, Apr. 5———; b. Upton, Essex, England. He graduated at London Univ. in arts 1847, and medicine 1852, and became a fellow of the Royal Col. of Surgeons, England, 1852, and of the Royal Col. of Surgeons, Edinburgh, 1855; was successively assistant surgeons. geon and lecturer on surgery, Edinburgh; regius prof. of surgery, Glasgow; prof. of clinical surgery, Edinburgh; prof. of clinical surgery, King's Coll. Hospital, London; and was made surgeon extraordinary to the queen. In addition to important observations on the coagulation of the blood, the early stages of inflammation, and other matters, his great work has been the introduction of what is known as the antiseptic system of surgery. This system and the theory on which it is based are now almost universally accepted, and their acceptance has in great measure revolutionized modern surgery, removing some of its most serious dangers, and thus greatly widening its field of use-L. has been awarded many foreign honors; in 1880 he received the medal of the Royal Soc., and in 1881 the prize of the Acad. of Paris. He is LL.D. of Edinburgh, Glasgow, and Cambridge, and D.C.L. of Oxford. In 1883 he was made a baronet, and in 1897 he was raised to the peerage. His father was Joseph Jackson L., London

LISTERIAN-LISZT.

merchant, who attained distinction by his knowledge of optics and by his improvement of the achromatic microscope. Among Lord L.'s works is Remarks on a Case of Compound Dislocation of the Ankle with Other Injuries, Illustrating the Antiseptic Treatment (1870).

LISTERIAN, a. lis-tē'rī-an: of or pertaining to Sir Joseph Lister or his surgical method. See Lister, Joseph, Lord. Listerism, n. -izm: the antiseptic method of surgery and of dressing wounds as practiced by Sir Joseph Lister. See Asepsis: Antiseptics: Carbolic Acid: Germ Theory. Listerize, v. -īz: to treat (surgically) by Lister's method.

LISTON, lis'ton, Robert: surgeon: 1794, Oct. 28—1847, Dec. 7; b. Ecclesmachan, county of Linlithgow, Scotland; son of the Rev. Henry L., minister of the parish. After studying anatomy under Barclay in Edinburgh, and following the usual course of medical study in that city, he went to London 1816, where he attended the surgical practice of Abernethy at St. Bartholomew's. He returned to Edinburgh; 1818 was elected a fellow of the Royal College of Surgeons of that city, began his career as a lecturer on anatomy and surgery, and soon became remarkable for boldness and skill as an operator. Because of his many successful operations on patients who had been discharged as incurable by the surgeons of the Edinburgh Infirmary, he was requested by the managers to refuse his assistance to any person who had been a patient in that institution, and to abstain from visiting the wards. He naturally declined to accede to these extraordinary propositions, and in consequence was expelled, and never entered again its wards, until 1827 he was elected one of its surgeons. His surgical skill, and the rapidity with which his operations were performed, soon acquired for him a European reputation; and 1835 he accepted the invitation of the council of University College to fill the chair of clinical surgery, and soon acquired a large London practice. In 1840, he was elected a member of the council of the College of Surgeons; 1846, he became one of the board of examiners. In the very climax of his fame, and apparently in vigorous health, he was struck down by a fatal disease. His most important works are *Elements of Surgery*, 1831, and *Practical Surgery*, 1837 (4 editions). His uncontrollable temper, and the coarseness of language in which he frequently indulged, involved him in various quarrels with his professional brethren; yet did not prevent his obtaining the esteem of his pupils.

LISTS, n. plu. *lists* [OF. *lisse*; F. *lice*, a list or tilt-yard: comp. F. *lice*, the weft or woof of cloth]: the ground inclosed for a race or combat: see List 1.

LISZT, list, Franz, Abbé: 1811, Oct. 22—1886, July 30; b. Raiding, Hungary. His father, a functionary on the estates of Prince Esterhazy, had some musical skill, and carefully cultivated the wonderful talent which L. showed even in infancy. In his ninth year, the child played publicly at Presburg, and excited universal aston-

ishment. By the assistance of two Hungarian noblemen—Counts Amadi and Sapary—L. was sent to Vienna, and placed under the instruction of Czerny and Salieri. He studied assiduously 18 months, after which he gave concerts in Vienna, Munich, and other places with brilliant success. In 1823, he went with his father to France, intending to complete his musical education at the Conservatoire; but he was refused admission on account of his being a foreigner; nevertheless, his genius made a way for itself. He played before the Duke of Orleans, and very soon the clever, daring boy became the favorite of all Paris. Artists, scholars, high personages, ladies—all paid homage to his marvellous gift, and it was only his father's strict supervision that prevented young L. from being entirely spoiled. In the next three years, he visited England thrice, and was warmly received. In 1827, his father died at Boulogne, and L. became his own master at the age of 16. For several years his life showed that he had become independent too soon. Alternations of dissipation and religious mysticism induced his admirers to fear that his artistic course would end in disastrous failure. Fortunately, he heard the famous violinist, Paganini, 1831, and was seized with a sudden ambition to become the Paganini of the piano; and it may be said that on the whole he succeeded. Till 1847, his career was a perpetual series of triumphs in all the capitals of Europe. He then grew tired of his itinerant life, and became leader of the court concerts and operas at Weimar. In 1865 he took sacred orders and became a monk, in the chapel of the Vatican, Rome; and 1871 returned to his native country, which granted him a pension of \$3,000 a year. In 1875 he was named director of the Hungarian Acad. of Music. L. was also an industrious and original contributor to musical literature.

LIT, v.: pp. of LIGHT, which see.

LITANY, n. lit'a-ni [F. litanie—from mid. L. litania -from Gr. litanei'ă, a prayer, supplication]: solemn form of supplication used in public worship. The specific meaning of the word has varied considerably at different times, but in general it has denoted a solemn act of supplication addressed with the object of averting the divine anger, especially on occasions of public calamity. Through all the varieties of form which litanies have assumed, one characteristic has been maintained viz., that the prayer alternates between the priest or other minister, who announces the object of each petition, and the congregation, who reply in a common supplicatory form, the most usual of which was the wellknown 'Kyrie eleison!' (Lord, have mercy!) In one procession which Mabillon describes, this prayer, alternating with 'Christe eleison,' was repeated 300 times; and in the capitularies of Charlemagne, it is ordered that the 'Kyrie eleison' shall be sung by the men, the women answering 'Christe eleison.' The utterance of an L. in procession by great numbers of people was common. From the 4th c. onward, the use of litanies was general. The Antiphonary of St. Gregory the Great contains several. In the Rom. Cath. Church, three litanies are especially in use-'the litany of the saints' (the most ancient), the 'litany of the name of Jesus,' and the 'litany of Our Lady of Loretto.' Of these, the first alone has a place in the public service-books of the church, on the rogation-days, in the ordination service, the service for the consecration of churches, the consecration of cemeteries, and many other offices. Although called litany of the saints, the opening and closing petitions, and indeed the greater part of the L., consist of prayers addressed directly to God; and the prayers to the saints are not for their help, but for their intercession on behalf of the worshippers. The L. of Jesus consists of a number of addresses to Christ under his various relations to men, in connection with the several details of his passion, and of adjurations of him through the memory of what he has done and suffered for the salvation of mankind. The date of this form of prayer is uncertain, but it is referred, with much probability, to the time of St. Bernardino of Siena, 15th c. The L. of Loretto (see Lor-ETO) resembles both the above-named litanies in its opening addresses to the Holy Trinity, and in its closing petitions to the 'Lamb of God, who taketh away the sins of the world;' but the main body of the petitions are addressed to the Virgin Mary under various titles, some taken from the Scriptures, some from the language of the Fathers, some from the mystic writers of the mediæval church. Neither this L. nor that of Jesus has ever formed part of any of the ritual or liturgical offices of the Rom. Cath. Church, but there can be no doubt that both have in various ways received the sanction of the highest authorities of that church.

In the Prayer-book of the English Church, the L. isre-

LITCHFIELD-LITERAL.

tained, but though partaking of ancient forms, it differs from that of the Rom. Church, and contains no invocation of the Virgin or the saints. It is divided into four parts—invocations, deprecations, intercessions, and supplications, in all of which is preserved the old form of alternate prayer and response. It is no longer a distinct service, but, when used, forms part of morning prayer.

LITCHFIELD, *lich'fēld*: town in Conn., co. seat of L. co., in the n.w. part of the state; about 1,000 ft. above sea-level. It is beautifully situated between the Naugatuck and Shepaug rivers, near the largest lake in Conn., and is a favorite summer resort for dwellers in the large cities. It has good water-power and thriving manufactures. L. was the seat of the first ladies' seminary in the United States, and of the most celebrated law-school of the last century—the latter, under the conduct of Judge Tapping Reeve and Judge James Gould, graduating some of the most eminent statesmen and jurists of the country. At the same period the celebrated Dr. Lyman Beecher was pastor of the First Church (Congl.). Pop. (1880) 3,410; (1890) 3,304; (1900) 3,214.

LITCHFIELD, *lich'feld*: city in Montgomery co., Ill.; on Shoal Creek basin, and the Indianapolis and St. Louis, and the Wabash St. Louis and Pacific railroads; 42 m. s. of Springfield, 47 m. n.e. of St. Louis. It contains 6 churches, 2 national banks, several graded public schools, Ursuline convent, 3 flour-mills, 3 grain elevators, extensive car shops, foundry, and machine shops, and Holly system of water-works; and does a large business in manufactures, grain shipments, and coal production. It was founded 1854, incorporated 1859. Pop. (1870) 3,852; (1880) 4,326; (1890) 5,811; (1900) 5,918.

LITCHI, lēt'chē or lī'tchĭ or lē-chē' or LEE-CHEE (Nephelium Litchi): one of the most delicious fruits of China and of the Malayan archipelago. The tree which produces it belongs to nat. ord. Lapindacea, and has pinnate leaves. It is extensively cultivated in s. China, and in northern provinces of Cochin-China, but is said not to thrive in a climate either much more hot or much The fruit is of the size of a small walnut, and grows in racemes. It is a red or green berry, with a thin, tough, leathery, scaly rind, and a colorless semitransparent pulp, in the centre of which is one large dark-brown seed. The pulp is slightly sweet, subacid, and very grateful. The Chinese preserve the fruit by drying, and in the dried state it is now frequently exported to Britain, still preserving much richness of flavor.—The Longan and Rambutan are fruits of the same genus.

LI'TER: see LITRE.

LITERAL, a. lit'er-ăl [L. literālis; It. litterale, literal—from L. literă, a letter]: according to the letter or exact words; real; not figurative. LIT'ERALLY, ad. -li, according to the strict meaning of the words and letters; word

LITERARY—LITH.

by word; without exaggeration. LIT'ERALNESS, n. -nés, the state of being literal. LIT'ERALISM, n. -izm, the state of agreeing with the exact letters or words; that which accords with the exact words. LIT'ERALIST, n. -ist, one who adheres to the exact letter.

LITERARY, a. lit'er-ă-ri [L. literāriŭs, belonging to learning-from literă, a letter: It. letterario: F. littéraire]: pertaining to, or connected with, literature or men of letters; respecting learned men; consisting in written or printed compositions. LIT'ERATE, a. -āt, learned: N. one who is ordained without having previously passed through a college or university course. LIT'ERA'TI, n. plu. -ā'tī [L.]: learned men; the learned. LIT'ERATURE, n. -ă-tūr OF. literature—from L. literatūră, scholarship]: written compositions, except those on science or art; writings or productions on a given subject; acquaintance with books; learning. LIGHT LITERATURE, works of fiction, and that class of literary productions in general, meant to beguile idle moments. Polite literature, literary works of elegance and taste, such as poetry, the lighter phases of history, etc.; belles lettres.—Syn. of 'literature': knowledge; science; erudition; belles lettres.

LITERARY PROPERTY (aside from Copyright, Patent, and Trade-mark): ownership of an author's writings by him, apart from any connection with their pub-It is different from ordinary ownership as of lication. something acquired by purchase or bequest, its title being in the material and form of its subject, and not in any quality predicated on its market value; thus, an author's ownership of an unpublished novel is precisely the same as his ownership of a letter that he has writ-Its title rests on the fact of creation, and may be compared to the interest which a father has in the earning capacity of his children. The distinctive characteristic of this kind of property is shown in this, that an author inscribing and presenting a copy of verses to a friend, does not thereby lose his literary property therein. The recipient may destroy, or give way, or sell, his copy of the verses, but if those verses are published without the author's sanction, the latter can prosecute the recip-This property is transferable, like any ient therefor. other, by sale, bequest, absolute gift, or regular succession; but creditors cannot seize it for publication, and its unauthorized publication by any one can be legally restrained. See Copyright: Patent: Trade-Mark.

LITERATIM, ad. *lit'er-ā'tim* [L. *literātim*—from *litĕrā*, a letter]: literally. LITERATIM ET VERBATIM [L. et, and; *verbātim*, verbally]: letter for letter, and word for word.

LITH, n. lith [AS. lith, a limb, a joint: Gael. luth, a joint]: in Scot., a joint; a vertebra; one of the natural divisions in any fruit or bulb, as the layers of an orange, or of an onion; one of the rings round the base of a cow's horn: V. to separate joints or layers. LITH'ING, imp. LITHED, pp. litht.

1

4 1 1

LITHAGOGUE-LITHIC ACID DIATHESIS.

LITHAGOGUE, n. lith'a-gög [Gr. lithos, a stone; agō, I lead, I draw]: medicine or preparation intended to expel stone from the bladder or kidneys.

LITHARGE, n. lith'arj [Gr. lithar'gŭros, the spume or scum of silver—from lithos, a stone; ar'gŭros, silver]: partially fused or vitrified protoxide of lead, which enters largely into the composition of flint-glass, and which, if added to boiling linseed and other oils, imparts to them the property of drying: see Lead.

LITHATE, n. *lith'āt* [Gr. *lithos*, a stone]: a salt formed by lithic acid with a base.

LITHE, a. līth [Goth. lithus; AS. lith; Ger. glied, a limb: Icel. lidr, a joint: Norw. lidig, that which bends or moves with ease]: flexible; easily bent. LITHE'NESS, n. -nĕs, flexibility; pliability. LITHESOME, a. līth'sŭm, supple; nimble. LITHE'SOMENESS, n. -nĕs, the state or quality of being lithesome. LITHER, a. lǐth'ėr, in OE., soft; pliant; slothful.

LITHIA, n. lǐth'ĩ-ă [Gr. lithos, a stone]: an alkali, first found in a mineral called petalite. LITH'IUM, n. -ĭ-ŭm, an elementary body, a white metal obtained from lithia.—See LITHIUM, below.

LITHIASIS, n. lith-ī'ă-sis [Gr. lithi'ăsis—from lithos, a stone]: gravel or urinary calculi, deposits of solid elements in the parts of the urinary apparatus. LITH'IC, a. -ik, belonging to a stone or calculus; applied to an acid liable to be formed in the kidney or the bladder, and to concrete into calculi (see URIC ACID: LITHIC ACID DIATHESIS). LITH'ICS, n. plu. -iks, medicines that tend to prevent stones in the bladder.

LITHIC ACID DIATH'ESIS: medical term denoting the condition in which there is an excess of lithic (or uric) acid (see URIC ACID), either free or in combination. or both, in the urine. The urine of persons who have the lithic acid diathesis is usually of dark golden color, like brown sherry, and is more acid, of higher specific gravity, and less abundant than the urine in health. When the urine cools, there is usually a deposit or sediment of lithates. The sediment is usually spoken of as one of lithate (or urate) of ammonia, but in reality it consists mainly of lithate of soda mixed with lithates of ammonia, potash, and lime. Its color varies according to the amount and nature of the urine-pigment which tenaciously adheres to it, so that its tints vary from a whitish yellow to a brickdust red, or even a deep purple. Persons seeing these deposits in their urine when it has cooled, are often led to fear that they may aggregate and harden in the bladder, and form a stone. Such fears may, however, be relieved by heating the urine containing the sediment to the temperature of the interior of the body (about 100°), when the fluid will resume its original clearness, and the sediment will disappear.

The color of the deposit is of considerable inportance in determining its value as a morbid symptom. Tawny or reddish sediments of this kind are frequently the result of mere indigestion or a common cold; the yellowishwhite sediments require more attention, as they are believed frequently to precede the excretion of sugar through the kidneys. The pink or brickdust sediments are almost always associated with febrile disturbance or acute rheumatism; and if these sediments are habitual. without fever, there is probably disease of the liver or If the urine is very acid, a portion of the lithic acid is separated from its base, and shows itself, as the fluid cools, in a free crystallized state, resembling, to the naked eye, grains of Cayenne pepper, but appearing under the microscope as rhombic tablets. This free lithic acid is far less common than the lithates, and does not dissolve on the application of heat.

The persons who suffer from this diathesis are chiefly adults beyond the middle age, and of indolent and luxurious or intemperate habits. As the formation of lithic deposits is due to over-acidity of the urine, alkalies are the medicines commonly prescribed, and the preparations of potash are far preferable to those of soda, because lithate of potash is perfectly soluble, and will pass off dissolved in the urine, while lithate of soda is a hard,

insoluble salt.

Regimen is, however, of far more use than medicine in the lithic acid diathesis. The patient should dine moderately and very plainly, avoiding acid, saccharine, and starchy matters and fermented liquors. The skin should be made to act freely by friction, and by occasional warm or daily tepid baths. Warm clothing must be used; plenty of active exercise must be taken in the open air; and the healthful action of the bowels and liver secured. It must be recollected that the lithates are sometimes thrown down, not from undue acidity of the urine, but simply from that fluid not containing the due quantity of water to hold them in solution. In such cases, a tumbler of cold spring water drunk night and morning will at once cause the cessation of this morbid sympton.

LITHIUM, lith'i-um [see Lithia], (symb. Li; equiv. 7.0; sp. gr. 0.5936): metallic base of the alkali lithia; of white silvery appearance; much harder than sodium or potassium, but softer than lead. It can be welded at ordinary temperatures, and drawn out into wire inferior in tenacity to leaden wire. It fuses at 356°. It is the lightest solid metal known, its specific gravity being little more than half that of water; it decomposes water at ordinary temperatures. It burns with a brilliant light in oxygen, chlorine, and the vapors of iodine and bromine. It is easily reduced from its chloride by means of a galvanic battery. L. forms two compounds with oxygen, viz., lithia (formerly known also as lithion or lithon), which is the oxide of lithium, and a peroxide, whose formula has not been determined.

LITHOBIPLION—LITHOGENOUS.

Lithia, in a pure and isolated state, cannot be obtained. Hydrate of lithium (LiOH) occurs as a white translucent mass, which closely resembles the hydrates of potash and soda. The salts of lithia are of sparing occurrence in nature. The minerals petalite, triphane, lepidolite, spodumene, and tourmaline contain lithia in combination with silicic acid, while triphyline and amblygonite contain it as a phosphate; it is present also

in small quantities in many mineral waters. Carbonate of lithium (LiCo₃) is precipitated when carbonate of ammonia is added to a strong solution of chloride of L., and occurs as a white mass with a slight alkaline reaction. At a dull red heat, it melts into a white enamel. It requires 100 parts of water for its solution, but is more soluble in water charged with carbonic acid. The solution of the salt has been strongly recommended in cases of gout and gravel, in consequence of the solvent power which it exerts on uric acid. The sulphate, phosphate, and nitrate of lithia are of no special importance. Chloride of L. (LiCl) is readily prepared by dissolving the hydrate of lithia in hydrochloric acid, and evaporating. It crystallizes in octohedra, and is one of the most deliquescent salts known. It is important as the source whence L. and carbonate of lithium are obtained. This salt heated in a colorless flame colors it brilliantly red, giving the most beautiful red flame known. Its spectroscopic detection is thus easy.

Lithia was discovered 1817 by Arfvedson. The metal L. was obtained first 1822 by Brande, but nothing was known regarding its properties until 1855, when Bunsen and Matthiessen discovered the present method of obtaining it, and carefully investigated its physical and

chemical characters.

LITHOBIBLION, n. lith-o-bib'li-on [Gr. lithos, a stone; biblion, a book]: species of schistous, usually calcareous stone, having the figures of leaves between the laminæ; called also bibliolite and book-stone.

LITHOCARP, n. lith'ō-kârp [Gr. lithos, a stone; karpos, fruit]: a fossil fruit, now usually called a carpolite.

LITHOCHROMATICS, n. plu. līth'ō-krō-māt'īks [Gr lithos, a stone; chroma, color]: the art of painting in oil upon stone, and taking impressions therefrom upon canvas.

LITHODOMUS, n. līth-ŏd'ō-mŭs, LITHODOMI, n. plu. līth-ŏd'ō-mī [Gr. lithos, a stone; L. domus, a house]: genus of mollusks, of the family of mussels, whose type is Mytilus lithophagus of Linnæus (see LITHOPHAGI): they bore into rocks and stones, and form for themselves permanent lodgments. LITHOD'OMOUS, a. -mŭs, pertaining to

LITHOGENOUS, a. lith-oj'e-nus [Gr. lithos, a stone; genos, birth, a race]: applied to animals which secrete or build up stony structures, as the coral-polyp.

LITHOGRAPH-LITHOGRAPHY.

LITHOGRAPH, n. lith'ō-grăf [Gr. lithos, a stone; graphō, I engrave or write]: a print from lettering, or from a drawing, which has been impressed on a prepared stone of a particular description: V. to place or impress letters or drawings on stone and then transfer them to paper by printing with a press. Lith'ograph'ing, imp. Lith'ographed, pp. -grăft. Lith'ograph'ic, a. -grăf'ik, or Lith'ographed, a. -grăf'i-kăl, pertaining to lithography. Lith'ograph'ically, ad. -kăl-li. Lithography, n. lith-ŏg'ră-fi, see below. Lithog'-rapher, n. -ră-fer,'a writer or designer on stone; a workman who takes impressions from lithographic stones. Lithographic limestone, slaty, compact, and fine-grained—extensively employed in lithography (q.v.).

LITHOG'RAPHY: art of printing from stone; invented by Aloys Senefelder, at Munich, about the end of the 18th c. It consists, first, in writing and drawing on the stone with the pen and brush, with the graver, and with the crayon or chalk; or in transferring to the stone writings and drawings made with the pen or brush on transfer-paper, or impressions from copper, steel, and pewter plates, taken on a coated paper, and then in printing off from the stone the writings or drawings thus made upon it. The principles of the art are these: an unctuous composition having been made to adhere to a calcareo-argillaceous stone, those parts covered by it—i.e., the writing or drawing—acquire the power of receiving printing-ink, whereas those parts not containing the writing or drawing are prevented from receiving the ink from the inking-roller by the interposition of water; and lastly, an absorbent paper being laid on the stone, and subjected to strong pressure, copies are obtained.

The best lithographic stones are found at Kelheim and Solenhofen, near Pappenheim, on the Danube, in Bavaria; but they have been found also in Silesia, England, France, Canada, and the W. Indies. These stones are composed of lime, clay, and silicious earth, and are of various hues, from pale yellowish-white to light buff, reddish, pearl-gray, light-gray, blue, and greenish. Those of uniform color are best. The yellow-buff ones, being soft, are adapted for lettering and transfer; the pearl-gray ones, being harder, for chalk-drawings and engraving. They are found in beds, commencing with layers of the thickness of paper, till they reach the dimensions of an inch or several inches in thickness, when they are easily cut, being yet soft in the quarries, to the sizes required in printing. The stones are ground plane with sand, and, when required for the pen, the brush, the graver, or transfer, they are polished with pumice and water-of-Ayr stone; and for chalk-drawings and graduated tints, an artificial grain is given by ground glass or fine sand.

When any writing or drawing has been finished on

LITHOGRAPHY.

stone, it then requires to be etched, thus: a mixture of 2 parts of nitrie aeid, and 40 to 60 parts of dissolved gum-arabic, is poured over the stone once or several times, according to the nature of the work. The etching changes the surface of the stone, raising the work on it to a degree scareely perceptible to the naked eye. The writing or drawing, which has been effected by greasy ink or chalk, remains protected from the action of the acid, and those protected parts retain the natural property of the stone, which is the qualification of receiving printing-ink; and, when the printer wets the stone before applying the inking-roller, the water enters only those parts of the stone which have been affected by the acid, while the ink adheres to only those parts, however fine, on which the acid could not operate, owing to the unctuous composition of the ink or ehalk with which the drawing or writing has been done, and which, being greasy, rejects the water. Thus it is ealled chemical printing.

The chemical ink, for writings and drawings in line, is composed of 2 parts of white wax, 2 shell-lac, 1 hard soap, $\frac{1}{2}$ tallow, $\frac{1}{6}$ carbonate of soda, and 1 of powdered lamp, or better, Paris black. The chemical chalk (crayon) is made of 3 parts of white wax, 2 hard soap, 1 shell-lac, $\frac{1}{2}$ 'drops of' mastic, 1 tallow, $\frac{1}{2}$ old lard, $\frac{1}{6}$ Venetian turpentine, $\frac{1}{6}$ Brunswick black, $\frac{1}{6}$ carbonate of soda, and $1\frac{1}{2}$ of Paris black, properly melted and burned together.

When the drawing or writing with ink on a polished stone is completed, the etching is proceeded with, and a portion of the etching composition allowed to dry on the stone. The printer then adjusts his stone in the press, washes off the dried gum, removes the whole drawing or writing with turpentine, wets the stone with a sponge or damping canvas, then applies his roller containing the printing-ink, and rolls it several times over the stone till the lines appear again. When sufficient ink has been applied to the lines, the paper is laid on the stone, drawn through the press, and the impression effected. The damping and inking of the stone are renewed for every impression.

Chalk-drawings are done on the grained stone with the chemical ehalk, with the stump and scraper, and sharp lines with ink; so that, if boldly and systematically treated, by giving the effect first, and detail afterward, there will be produced richness and softness of appearance and freedom of manipulation, and a great many

impressions can be yielded.

Tinted drawings, chromo-lithography, and colored mans require as many stones—grained or polished as the ease may be—as there are various tints or colors, one stone being printed after the other, and so fitted and blended together as to produce, when complete, the effect desired.

The following is a process, favorite in Great Britain, for writings, plans, and drawings, done with transparent

LITHOGRAPHY.

quills, steel-pens, and small camel-hair brushes, on yellow transfer paper, prepared as follows: 1 part best flakewhite, 1 isinglass or gelatine, with a little gamboge to give it color, are dissolved in water over a slow fire, then sifted through double muslin, and spread once, in a very warm state, with a large, flat camel-hair brush on one side of good-sized, smooth, thin paper, which, when dry, requires to be passed frequently over a heated stone, through the press. The paper being drawn or written upon with lithographic ink, is, when finished, put for a few minutes between damp blotting-paper; a warmed stone is put in the press, the sheet is placed with the coated side upon it, and then passed several times through the press; the back of the paper, now adhering to the stone, is then sponged with water; the stone is turned, and passed several times again through the press in the opposite direction, after which the sheet is softened with water, and rubbed with the fingers until it can be easily removed from the stone. Some gum is then put upon it; and a linen rag is dipped in printing-ink, and, with the aid of a little water, passed in all directions over the lines till they appear black and clean. The stone is then allowed to cool, inked with the roller, then very slightly etched; and, after being cleaned, is ready for use.

Authography is the name given to a writing or drawing with the chemical ink on one side of any plain—not coated—paper, for example, bankers' circulars; the transfer is in the manner above described, with the difference, that the sheet, when laid on the stone, is passed only

once through the press.

Transferring of any writings, maps, drawings in line or music, done on copper, steel, and pewter-plates, and retransferring of any line-work, already on the stone, form a very important part of lithography, as an unlimited number of impressions can be produced at very moderate expense without wearing out the original plates or stones, and as parts of various plates, stones, and letterpress can be transferred to, and printed from, the same stone. The best transfer-paper for this purpose is the following: mix 3 parts of shoemakers' paste (without alum) with 1 part of best ground plaster of Paris, a little dissolved patent glue, and some tepid water; strain the mixture through double muslin in a common jar, and, when cooled, spread it with a large, flat camel-hair brush over half-sized thickish paper. The ink for taking transfers is a composition of two table-spoonfuls of printing varnish, 1½ parts of tallow, 3 brown hard soap, 4 brown wax, 5 shell-lac, 5 black pitch, and 21 parts of powdered lampblack. The various ingredients are melted for 25 minutes, and fire set to the mass for other 15 minutes-When the impressions afterward formed in sticks. have been made on this coated paper with this transferink, the transfer is accomplished on the stone as above described.

LÎTHOIDAL—LITHONTRIPTICS.

With regard to engraving and etching on stone, photointhography, the application of electrotyping to lithography, the working of the ruling-machine for skies and ornaments, the lithographic steam-press, etc., see special works on Lithography: see also Photography.

In lithography Germany occupies the first place for careful execution, France for rich and artistic effect, Britain for transferring, tint-printing, and chromo-printing. In recent years good work in these lines has been

done in the United States.

Strixner, Hohe, Hanfstängl, Piloty, Loehle, Locillot, Auer, Leon Noel, Mouilleron, Engelmann, Sabatier, Calame, Lasalle, Haghe, Ghémar, Hullmandel, Day, Hanhart, Brooks, Lemercier, with many others, have helped to perfect lithography.

LITHOIDAL, a. lith-oy'dăl [Gr. lithos, a stone; eidos, resemblance]: stony in appearance or structure.

LITHOLATRY, n. lith-öl'ä-tri [Gr. lithos, a stone; latreia, worship]: the worship of stones of particular shapes.

LITHOLOGY, n. lith-ŏl'ŏ-ji [Gr. lithos, a stone; logos, discourse]: department of geology which treats of the physical characteristics of rocks and strata, i.e., their constitution and structure, without reference to the fossils that they may contain or to their relations in time or position to each other. Lithologic, a. lith-ō-lŏj'ik, or Lith'olog'ical, a. -lŏj'i-kăl, pertaining to. Lith'olog'-ically, ad. -kăl-lī. Lithol'ogist, n. -ŏl'ŏ-jist, one who is skilled in the science of stones.

LITHOLYSIS, n. lith-ŏl'is-is [Gr. lithos, a stone; lüsis, a loosening or release]: the treatment for the solution of the stone in the bladder.

LITHOMANCY, n. *lǐth'ō-măn-sĩ* [Gr. *lithos*, a stone; *manteia*, divination]: divination by means of stones.

LITHOMARGE, n. lith'ō-mârj [Gr. lithos, a stone: L. marga, marl]: earthy mineral, sometimes called Mountain Marrow (Ger. Steinmark), consisting chiefly of silica and alumina, with oxide of iron and various coloring substances. Several varieties of clay are included under the term. It is soft, greasy to the touch, and adheres strongly to the tongue. It is generally white, yellow, or red, often exhibiting very beautiful colors. It is found in Germany, Russia, etc., also in the tin-mines of Redruth in Cornwall. It arises in some cases from the decomposition of felspathic rocks, as in kaolin or chinaclay, and in others from the deposition of aluminous springs.

LITHONTRIP'TICS: remedies which, whether taken by the mouth, or injected into the bladder, act as solvents for the stone. Various medicines have at different times been recommended and employed as solvents for the stone. Rather more than a century ago, limewater and soap, swallowed in sufficient quantities, had high

LITHONTRIPTY—LITHOPHANE.

reputation as solvents for urinary calculi. These were the only active ingredients in Miss Stephens's Receipt for the Stone and Gravel, which was reported on so favorably by a committee of professional men, in England, that parliament, 1739, purchased the secret for The treatment doubtless afforded relief; but there is no evidence that any calculus was actually dissolved, for in the bladder of each of the four persons whose cure was certified in the report, the stone was found after death. At present, no substance is known which, taken by the mouth, has the power of dissolving calculi; but as Dr. Prout remarks in his treatise, On the Nature and Treatment of Stomach and Urinary Diseases, remedies of this class are to be sought 'among harmless and unirritating compounds, the elements of which are so associated as to act at the same time, with respect to calculous ingredients, both as alkalies and acids.' Solutions of the super-carbonated alkalies containing great excess of carbonic acid—e.g., the natural mineral waters of Vichy—approach most nearly to what is required. The relief which in many instances has followed administration by the mouth of substances supposed to be lithortriptics, has been derived not from the solution of the calculi, but from diminution of irritation and pain in the bladder.

On the other hand, considerable success has been obtained by direct injection of solvents into the bladder, especially when the nature of the calculus is suspected; weak alkaline solutions having apparently caused the disappearance of uric acid calculi, while phosphatic calculi have unquestionably been dissolved by the injection of very weak acid solutions. It is reported that a weak galvanic current has been recently found success-

ful in the hands of an Italian surgeon.

LITHONTRIPTY, n. lith'on-trip'ti [Gr. lithos, a stone tribo, I grind or wear by friction]: the operation of crushing a stone in the bladder or kidneys. LITH'on-trip'tic, a. -trip'tik, having the quality of dissolving or destroying the stone in the bladder or kidneys (see LITHONTRIPTICS). LITH'ONTRIP'TIST, n. one skilled in operating for stone in the bladder. LITH'ONTRIP'TOR, n. -ter, an instrument for destroying the stone in the bladder by crushing it.

LITHOPHAGOUS, a. lith-ŏf'ă-gŭs [Gr. lithos, a stone; phagō, I eat]: eating or swallowing stones or gravel, as certain birds. Lithoph'agi, n. plu. -ă-jī, also Lithophagidæ, stone-eaters; the same as lithodomi: see Pholas.

LITHOPHANE, lith'o-fan [Gr. phanos, clear, transparent]: peculiar style of ornamental porcelain adapted chiefly to lamps and other transparencies; it consists of pretty pictures produced on thin sheets of white porcelain by stamping the porcelain, while still soft, with raised plaster-of-Paris casts of the pictures intended to

LITHOPHOTOGRAPHY-LITHOTOMY.

be produced. By this means, an intaglio impression is obtained; and when the sheet of porcelain has been hardened by fire, the impression gives a picture, which, owing to the transparency of the porcelain, has the lights and shadows correctly shown, as viewed by transmitted light. L. pictures are common in Germany, where the art has been more favorably received than in France, its native country. They are set in the sides of ornamental lamps and lanterns, and sometimes in decorative windows.

LITHOPHOTOGRAPHY, n. līth'ō-fō-tŏg'ră-fī [Gr. lithos, a stone; phos, light; phōtŏs, of light; graphō, I write]: the art of producing prints from lithographic stones by means of photographic pictures developed on their surface.

LITHOPHYL, or LITHOPHYLL, n. lith'ō-fil [Gr. lithos, a stone; phullon, a leaf]: the figure of a leaf on fossils.

LITHOPHYTES, plu. *līth'ō-fīts*, or LITHOPHYTA, n. plu. *līth'ō-fī'tā* [Gr. *lithos*, a stone; *phuton*, a plant]: stone-plants, applied to those polyps which secrete a stony axis, as the corals. LITH'OPHY'TIC, a. -fī'tīk, or LITH'OPHY'TOUS, a. -fī'tŭs, pertaining to stone-coral.

LITHORNIS, n. lith-ŏr'nis [Gr. lithos, a stone; ornis, a bird]: in geol., a term applied to certain bird-remains from the London or Eocene clay of the Isle of Sheppey.

LITHOTOMY, n. lith-ot'o-mi [Gr. lithos, a stone; tomē, a cutting]: operation or art of cutting for stone in the bladder. Lithotomic, a. lith'ō-tom'ik, pertaining to lithotomy. Lithot'omist, n. -mist, surgeon who extracts stones from the bladder by cutting it.—Lithotomy is a surgical operation popularly called cutting for the stone. As most of the symptoms of stone in the bladder (see Calculus) may be simulated by other diseases of the bladder and adjacent parts, it is necessary to have additional evidence regarding the true nature of the case before resorting to this serious operation. This evidence is afforded by sounding the patient—a simple preliminary operation, which consists in introducing into the bladder, through the natural urinary passage (the urethra), a metallic instrument, by means of which the stone can be plainly felt and heard.

L. has been performed in various ways at different times. The earliest form of L. is known as cutting on the gripe, or Celsus's method. It receives the former name from the stone, after being fixed by the pressure of the fingers in the anus, being directly cut upon and extracted; and the latter, from its having been first described, so far as is now known, by Celsus, though it had probably been practiced from time immemorial. At a later period, this operation received from Marianus the name apparatus minor (from a knife and hook being the only instruments used), to distinguish it from his own method, which he called apparatus major, from the

LITHOTOMY.

numerous instruments employed. The Marian method was founded on the erroneous idea, that wounds of membranous parts would not heal, while their dilatation was comparatively harmless. The object was to do as little as possible with the knife, and as much as possible with dilating instruments; and the necessary result was laccration and such other severe injury, that this became one of the most fatal operations in surgery. Nevertheless, it was the operation mainly in vogue for nearly 200 years, till Frère Jaques, 1697, introduced what is essentially the method now in use.

The lateral operation, so called from the lateral direction in which the incision is made into the neck of the bladder, in order to avoid wounding the rectum, is that which, with various minor modifications, is now almost universally employed. Frère Jaques, a priest, seems to have learned the method from a provincial surgeon, Pierre France, and to have practiced it with much success; and, 1697, he came to Paris to make it publicly known. The advantage of this operation, by which a free opening, sufficiently large for the extraction of a stone, can be made into the bladder without laceration of the parts or injury to the rectum, was immediately recognized by the leading surgeons of the time, and the Marian process was at once universally given up. The following are the leading steps of the operation. The patient being laid on the table, and chloroform being administered, an instrument termed a curved staff, with a deep groove, is passed into the bladder. An incision is then made on the left side of the mesial line, about an inch and threequarters in front of the anus, and extending downward to midway between the anus and the tuberosity of the left ischium. The incision should be sufficiently deep for the operator, on introducing a finger of the left hand, to feel the groove of the staff. The knife, directed by this finger, is now fixed in the groove, and sliding along it toward the bladder, divides the membranous portion of the urethra, the edge of the prostate, and the neck of the bladder. The knife is now withdrawn, as also is the staff, and the surgeon introduces the forceps over the finger of the left hand into the bladder, feels for the stone, and draws it out. At first, the urine escapes through the wound, but in favorable cases it is voided by the natural passage in a week, and the wound heals in the course of a month.

From the shortness of the female urethra and the extent to which it can be dilated, and, additionally, from the comparative rarity of calculous affections in women,

the operation of L. is restricted to the male sex.

The danger of the operation seems to vary with the age of the patient. Out of 186 cases collected by Hutchinson (London Hospital) 137 were under the age of 20, and of these, 123, or nearly 90 per cent., recovered; while of the 49 who were over 20 years of age, 26, or more than 53 per cent., died.

LITHOTRIPSY-LITHUANIA.

LITHOTRIPSY, n. lith'ō-trip'sĭ, or LITHOTRITY (q.v), n. lith-ŏt'rĭ-tĭ, or LITH'ONTRIP'TY (q.v.), n. lith-ŏn-trip'tĭ [Gr. lithos, a stone; tribō, I grind or wear by friction]: the operation of crushing a stone in the bladder in order that it may be discharged with the urine. LITH'o-TRIP'TIC, a. -trip'tĭk, pertaining to. LITH'OTRIP'TIST, n. -tĭst, or LITHOT'RITIST, n. one skilled in operating for stone in the bladder: see LITHOTRITY.

LITHOTRITY, n. lith-ot'ri-ti [Gr. lithos, a stone; L. tritus, bruised or ground]: the operation of breaking and crushing a stone in the bladder so that its fragments may be discharged through the urethra with the urine. Lithotrity (known also as Lithotripsy, or Lithontripty), may be regarded as the discovery of a French surgeon, Civiale, who commenced his researches 1817, but did not perform his first operation till the beginning of 1824. The need of such an operation had long been felt. The lithotrite, or instrument by which the disintegration of the stone is effected, is introduced in the same manner as a catheter or sound into the bladder, and, after catching the stone, either bores, hammers, or crushes it to pieces.

Crushing is now generally preferred, the stone being grasped by the blades of the instrument shown in the

figure, one blade acting on the other by means

of a screw.

The process seems, at first sight, so safe, as compared with the operation of lithotomy, that it is necessary to distinguish those cases in which it may be resorted to, and those in which it is contra-indicated. It may be resorted to when the patient is an adult, and the urethra full-sized and healthy, so as freely to admit the passage of the instrument; when the prostate is not much enlarged, which is very often the case in old men, and when the bladder is not thickened or very irritable: while it must be avoided in children, in consequence of the smallness of the urethra; when there is great irritation and thickening of the bladder; when there is great enlargement of the prostate, which hinders the manipulation of the instrument, and the escape of the broken fragments of stone; when the stone is of large size, as, for example, of a greater diameter than two inches; and when there is reason to believe that the concretion is a mulberry cal-

culus, which, from its extreme hardness, cannot readily be broken. Great care must be taken that no fragment remains in the bladder, as such fragments are almost

sure to form the nuclei of fresh calculi.

LITHUANIA, lith-ū-ā'ni-a: former grand-duchy, holding of the crown of Poland, which, before the partitions

LITIGATE—LITMUS.

of that country, was composed of three groups of territory: 1. L. proper, or Litiva, which formed the governments of Wilna and Troki; 2. The duely of Samogitia; 3. Russian L., comprising Polesie, Black Russia or Novogrodek, White Russia or Minsk, Meislav, Witebsk, Smolensk, Polotsk, and Polish Livonia. This country contained about 135,000 English sq. m., and was partitioned between Russia and Prussia. The Lithuanians, a race to whom belong the Letts of Livonia, the Cours of Courland, and the ancient inhabitants of e. Prussia, are closely allied to the Slavie peoples, and constitute with them one of the main divisions of the Indo-European stock. The Lithuanian language is still spoken by about 3,000,000 of people, but is dying out before German and Russian; in some respects it comes nearer Sanskrit than any other Aryan tongue.

L. was at first subject to Russia, but shook off the yoke about the end of the 12th c., and became an independent power. The nation was not converted to Christianity till the end of the 14th c. Their rulers, who bore the title of Grand Duke, conquered the neighboring Russian provinces, and even earried their ravages to the very gates of Moseow. The Grand Duke of L., Jagellon, was 1386 elected king of Poland, and issued an edict of union between the two countries, and 1569 the two were

declared to be one country.

LITIGATE, v. līt'ī-gāt [L. litigātus, disputed, quarrelled—from lis or litem, strife, a lawsuit: It. litigare]: to contest or dispute in law; to engage in a lawsuit. LIT'IGATING, imp. LIT'IGATED, pp. LIT'IGANT, n. -gānt, one who contends in law. LIT'IGA'TION, n. -gā'shān, the act of earrying on a suit at law for the recovery of a right or elaim. LITIGIOUS, a. lī-tīj'ās [F. litigieux—from L. litīgīōsus, eontentious]: given to carrying on lawsuits; contentious. LITIG'IOUSLY, ad. -lī. LITIG'IOUSNESS n. -nĕs, the disposition of being prone to earry on lawsuits.

LITMUS, n. lit'mus [Dut. lakmoes, an infusion of a lake or purple color—from lak, lae, and moes, pottage, pulp]: purple coloring matter prepared from several lichens, but chiefly from Lecanora tartarea. The lichens are powdered and digested with ammoniacal fluids, e.g., urine, till they undergo decomposition. Alum, potash. and lime are then added, and the mixture is allowed to stand till the maximum degree of color is observed. Sand and chalk are added, to give a due degree of solidity, and the mass is then dried in cubes, and is ready for the market. The exact nature of the changes which ensue is not altogether known; it is, however, certain that the pigment is originally red, and that it becomes blue only on the addition of alkalies or of lime. blue color is again changed into a red, on addition of a free acid. LITMUS-PAPER, unsized paper, colored blue with litmus, and used as a delicate test of the presence of acids, the feeblest acid turning litmus-paper to a red-

LITORN-LITTLE.

color, which is restored by an alkali to its original blue color: see Test-papers.

LITORN, n. lit'ern: a species of thrush.

LITOTES, n. $l\tilde{\imath}'t\tilde{o}$ - $t\tilde{e}z$ [Gr. $litot\tilde{e}s$, plainness, simplicity—from litos, plain, simple]: a figure of speech; a species of irony in which less is expressed than what is intended, as 'a citizen of no mean city'—that is, a city of considerable or great importance.

LITRAMETER, n. *li-trăm'ĕ-ter* [Gr. *litra*, a pound weight; *metron*, a measure]: an instrument for ascertaining the specific gravity of fluids.

LITRE, n. $l\bar{e}'tr$ [F.—from Gr. litra, a pound weight]: unit of the present French measures of capacity, both dry and liquid. It is the volume of a cubic decimètre (see Mètre), and is equal to 0.2200967 British imperial gallon, or about 1.76 Eng. pints. It is subdivided decimilly into the decilitre, centilitre, and millilitre (respectively $\frac{1}{10}$, $\frac{1}{100}$, and $\frac{1}{1000}$ of a litre). Ten litres are a decalitre; 100, a hectolitre; 1,000, a kilolitre. The hectolitre is the common measure for grain, and is equal to 0.3439009 British imperial quarter, or nearly $2\frac{3}{4}$ imperial bushels.

LITTER, n. līt'ėr [F. litière, the bedding of cattle, a covered couch—from lit, a bed: mid. L. lectārīā, a litter—from L. lectīcā, a couch, lectus, a bed]: straw, hay, and the like, used as a bed for horses, etc.; a framework supporting a sort of bed which may be borne by men or a horse; things strewed about in confusion; a condition of disorder or confusion: V. to cover or supply with straw or litter; to strew or scatter things about in confusion. LITTERING, imp. LITTERED, pp. līt'ėrd.

LITTER, n. lit'er [Icel. látr and láttr, a place where animals produce their young; latrask, to litter—from lag, a layer]: a brood of young pigs, kittens, and the like: V. to bring forth young, applied to small quadrupeds. LIT'TERING, imp. LITTERED, pp. lit'erd. Note.—This entry has hitherto been accepted as having the same origin with LITTER 1, but it has now been separated from LITTER 1 as really a different word, though confused with it: comp. prov. Eng. lafter, eggs laid by a hen—see Skeat.

LITTÉRATEUR, n. *līt-tā-rā-tėr'* [F.—from mid. L. *litteratōrem*, a man of letters]: a literary man; one devoted to literature, whether man or woman.

LITTLE, a. lit'l [AS. lytel; Goth. leitils; Icel. litill; Dut. luttel, little]: small in bulk, size, duration, or quantity; low in degree; trifling; not much: N. a small portion or quantity; small space: Ad. in a small degree or quantity; in some degree but not great; not much: compar. Less, or Lesser, les, or les'er; superl. Least, lest. Lit'tleness, n. -nes, smallness of bulk; meanness; want of dignity. A little, by a small degree; to a limited extent; for a short time; not much, By

LITTLE-LITTLEJOHN.

LITTLE BY LITTLE, gradually; by small degrees. LITTLE-GO, lit'l-jō, in familiar slang, the first university examination for undergraduates at Cambridge. The SMALLS is the corresponding slang term for the same at Oxford.—Syn. of 'little, a.': small; minute; diminutive; short; brief; insignificant; contemptible; inconsiderable; weak; slight; narrow; mean; penurious.

LIT'TLE, GEORGE: 1754, Apr. 10—1809, July 22; b. Marshfield, Mass: naval officer. At the beginning of the revolutionary war he was placed in command of the Mass. armed schooner The Boston; in 1779 became 1st lieut. on the Protector; soon afterward was captured by the British and imprisoned in Plymouth, England, whence he escaped; and on his return to the United States commanded the Winthrop till the end of the war. He was appointed commander of the U. S. frigate Boston 1798; commissioned capt. in the navy 1799, Mar. 4; captured several armed French ships; and was retired from the service 1801, Oct. 22. He was author of The American Cruiser, and Life on the Ocean, or Twenty Years at Sea (1844-5).

LITTLE FALLS: a city of Herkimer co., N. Y., on the Mohawk river, the Erie canal, and the New York Central and the West Shore railroads, 74 m. n.w. of Albany. The Mohawk here passes through a romantic gorge two m. in length, with falls of 42 ft., giving water-power to several paper-mills, woolen factories, flouring mills, etc. The village has 8 churches, a bank, 2 newspapers, and manufactures of axes, cotton, starch, shoes, etc. There is extensive trade in cheese. The scenery is picturesque: the canal is cut for two m. through solid rock, and its feeder is carried over the Mohawk on an aqueduct whose arch is of 70 ft. span. Pop. (1880) 6,910; (1890) 8,783; (1900) 10,381.

LITTLE HUM'BOLDT RIVER: principal tributary of the Humboldt river, in Humboldt co., Nev. It flows w. and then s. through Paradise Valley, and joins the Humboldt above Winnemucca; elevation 4,500 ft. It drains 35,000 acres of bottom and 90,000 acres of bench lands, both exceedingly fertile, and its tributary brooks

abound in trout.

LITTLEJOHN, lit'l-jon, Abram Newkirk, d.d., Ll.d.: Bishop of the Prot. Episc. Church: b. Florida, N. Y., 1824, Dec. 13. He graduated at Union College 1845; was ordained deacon in the Prot. Episc. Church 1848 and priest 1849; became rector of Christ Church, Springfield, Mass., 1850, St. Paul's Church, New Haven, 1851, and the Church of the Holy Trinity, Brooklyn, 1860; was elected pres. of Hobart College 1858 and bp. of central N. Y. 1868, but declined both offices; was lecturer on pastoral theology in Berkeley Divinity-school seven years; and was elected first Prot. Episc. bp. of Long Island 1868 and consecrated 1869, Jan. 27. In 1874 he was ap-

LITTLE KANAWHA-LITTLE ROCK.

pointed to take charge of the American Episc. churches in Europe, and since 1876 has given a large part of his time and work to aid the construction of the Cathedral of the Incarnation and the organization of the cathedral schools at Garden City (q.v.), erected by Mrs. Alexander T. Stewart as memorials of her husband. He received the degree of D.D. from the Univ. of Penn. 1855, and LL.D. from the Univ. of Cambridge 1880. He was long a frequent contributor to the Church Review, and had published Conciones ad Clerum (1880); Individualism: Discourses before the University of Cambridge, England, (1880); and The Christian Ministry at the Close of the Nineteenth Century, lectures before the Gen. Theol. Seminary (1884). He died 1901, Aug. 3.

LITTLE KANA'WHA RIVER: in W. Va.; rising in Upshur co., flowing w. through Calhoun co., then n.w. through Wirt and Wood cos., and emptying into the Ohio river at Parkersburg, after a flow of 150 m. through a rich agricultural, oil, and bituminous coal region. By damming it in three places, it has been made navigable to Burning Springs, 38 m. from its mouth.

LITTLE ROCK: city, cap. of Pulaski co., and the state of Ark.; on the Arkansas river, 250 m. above its mouth; and on the L. R. and Fort Smith, the Memphis and L. R., the St. Louis Iron Mountain and Southern, and the Mississippi Valley railroads; 125 m. s.w. of Memphis. It is an important commercial city, and occupies the first high ground that touches the river above its mouth. It is built on a rocky bluff, from which it derives its name, 50 ft. above the river, and is 2 m. below Big Rock, which reaches a height of 500 ft. The position commands an extensive view of the adjacent territory and of the river, here 400 yards wide and navigable for large steamboats eight months in the year. L. R. contains 28 churches; 2 nat. banks (cap. \$500,-000), 1 state bank (cap. \$325,000), 1 savings bank (cap. \$25,000), and 2 private banks; state capitol, state penitentiary, state library, and state institutions for the blind, deaf and dumb, and insane; U. S. arsenal, land office, and courts; 2 female colleges (Meth. Episc. Church, N. and S.); Rom. Cath. convent; Rom. Cath. acad. (Sisters of Charity); public library; 2 daily, 7 weekly, and 2 monthly papers; and excellent high and grammar schools. It has gas and electric light plants, street railroads, thorough natural drainage, and is credited with never having had an epidemic. It is the see of a Rom. Cath. bp., established 1843, and has a Rom. Cath. pop. of 9,000. Though a commercial city, and handling a large quantity of cotton annually, L. R. has a number of manufacturing establishments, including extensive cotton-seed oil-mills. L. R. was founded and became the seat of the terr. govt. 1820; was held by the confederates in the civil war till 1863, Sep. 10, when union troops under Gen. Steele captured it; and was the scene of much excitement and some bloodshed during LITTLE SISTERS OF THE POOR—LITTORALE. the Baxter-Brooks contest for the gov.'s office 1874. Pop. (1890) 25,874; (1900) 38,307.—Area, 8 sq. m.; total public debt \$198,918; assessed value real and personal property \$19,643,356; tax rate (1902) \$2.60 per \$100.

LITTLE SISTERS OF THE POOR: Rom. Cath. religious and charitable order of women, founded by M. le Pailleur, curé of St. Servan, France, 1840, and established in the United States 1868. Their special work is the support, relief, and nursing of aged and infirm poor persons, and they seek money, clothing, and other articles from door to door. In 1883 they numbered a total of 3,500, and maintained 25,000 old people in 223 homes, of which 31 were in the leading American cities. The American mother-house is in Brooklyn.

LITTLETON (or LYTTLETON), lit'l-ton, Sir Thomas DE, of Frankley, Worcestershire: celebrated English jurist: b. early in the 15th c., son of Thomas Westcote; d. 1481, Aug. 23. L.'s surname was that of his mother. He studied—it is thought probable—at Cambridge, after which he removed to the Inner Temple. Henry VI. appointed him steward or judge of the court of the palace, and 1455, king's serjeant, in which capacity he travelled the northern circuit. In 1466, he was made one of the judges of the court of common pleas; and 1475, knight of the Bath. L.'s fame rests on his work on Tenures, written in Norman-French, and published about the time of his death. It went through a multitude of editions. The first translation into English was made 1539, and in the next hundred years it went through no less than 24 editions. The changes in the laws relative to property have greatly diminished its value, and it is now little studied by lawyers; yet it is considered a model from the clear and logical manner in which the subject is handled.

LITTORAL, a. lit'ter-ăl [F. littoral—from L. litorālis, belonging to the shore—from L. litus, the sea-shore: It. litorāle]: of or relating to the shore, as of a sea or lake; in geol., applied to operations and deposits which take place near the shore, in contradistinction to those of a deep-water character; in bot., growing on the shore, as of a sea or lake, or on the banks of a river. LITTORAL CONCRETE, in geol., a particular variety of rock formed by the cementation of sea-sand or shells. LITTORAL ZONE, that zone of marine life which lies between high and low water mark, varying in extent according to the rise and fall of the tide, and the shallowness of the shore.

LITTORALE, or LITORALE, lit-to-râ'lā: province of Austria, on the n. coast of the Adriatic Sea, including the neighboring islands comprising the counties of Görz and Gradisca, the margraviate of Istria, and dist. of Trieste; 3,085 sq, m. Formerly its name was applied to two strips of land n. of the Adriatic Sea, the eastern of which has figured in Hungarian history. It was for-

LITTRÉ.

merly a part of the Croatian military territory; was made a civil dist. of Hungary by Maria Theresa, formed a part of the French province of Illyria under Napoleon, was recovered by Austria 1814, and attached to Hungary 1823, occupied by Croatia 1848, and attached to that province 1849, by Francis Joseph. The principal towns are Buccari and Porto Re. Pop. more than 60,000.

LITTRÉ, lē-trā', Paul Maximilien Émile: 1801, Feb. 1—1881, June 2; b. Paris: French journalist and distinguished philologist; compiler of the best dictionary of any of the living languages. He began the study of medicine, but did not take the degree nor enter on practice, but gave himself to researches in philology, mastering the principal ancient and modern languages; also studying the history of medicine. While active in editing various journals and literary collections, he prepared an edition and translation of the Works of Hippocrates (Euvres d'Hippocrate, 1839-61, 10 vols. 8vo.), which immediately opened for him the doors of the Acad. of In-

scriptions (1839, Feb.).

L., who held democratic opinions, and had distinguished himself among the combatants of July, became afterward connected with the National, and was one of its principal editors till 1851. When Auguste Comte's new philosophical and social doctrine appeared under the name Positive Philosophy, L., attracted by its scientific form, took it up with great ardor, and 1845, wrote a lucid and clever summary of it (De la Philosophie Positive), and afterward defended it in pamphlets and in journal articles. He deemed the revolution of 1848 as the advent of his opinions to power; but soon undeceived, he retired from active politics 1848, Oct., resigning even his office of municipal councilor of the city of Paris. He had ere this declined the decoration of the Legion of Honor. Returning to a life of study, L. continued his researches in medicine, at the same time working ardently at the history of the French language. Already master of the old forms of the French language, he published in Revue des Deux Mondes-to which he contributed many papers at different times—an article called, The Homeric Poetry and the Ancient French Poetry (La Poésie Homerique et l'Ancienne Poésie Française, 1847, July 1), which attracted great attention. it he attempted the translation of the first book of the Iliad in the style of the Tronvéres. The Acad. of Inscriptions chose him, in place of Fauriel (1844), one of the commission charged with continuing L'Histoire Littéraire de France (The Literary History of France), and he was one of the authors of vols. XXI, XXII, XXIII. In 1854, he was appointed editor of the Journal des Savants. L.'s great work is Dictionnaire de la Langue Française, containing, in addition to the usual information in French dictionaries, examples of the several meanings of the words, with exact reference to the classical works from which they are taken, besides the history of the

usage of each word in documents anterior to the 17th Not only are all questions of grammar and lexicography (including etymology—a subject in which French dictionaries have hitherto been singularly deficient) fully discussed, but historical allusions are explained, and numerous details given regarding the arts and sciences, rendering the work a kind of cyclopedia. It was in preparation for many years; began to appear 1863; and was completed 1873. This splendid work, the real thesaurus of the French language, long a desideratum, did not prevent the French Acad. 1863 from rejecting the author, whom M. Dupanloup denounced publicly as holding immoral and impious doctrines—referring to his ardent public advocacy of the Positivist theories. L. published also an excellent French translation of Strauss's *Life of Jesus* (1839–40, 2d ed. 1855); and a translation of Pliny's Natural History. In 1832 he published a paper on cholera. As editor or collaborateur, he was connected with the Dictionnaire de Médicine, the Gazette Medicale de Paris, and the surgical journal L'Expérience. Other works from his pen are Histoire de la Langue Française (1862, 2 vols. Svo), Paroles de Philosophie Positive (1859), Auguste Comte et la Philosophie Positive (1863), and Auguste Comte et Stuart Mill (1866). He published 1857 Œuvres Complètes d' Armand Carrel. In 1870, he contributed to the Revue Positiviste an article Des Origines organiques de la Morale, which attracted great notice, and furnished with new argument the Rom. Cath. theologians, who accused him of atheism. months before, L. had opposed the publication Comte's later works as being unworthy of him. Just before the siege of Paris, L.'s friends compelled him to quit the capital. In 1871, Jan., Gambetta appointed L. prof. of history and geography at the Ecole Polytechnique. Next month he was chosen representative of the Seine dept. in the national assembly, where he sat with the party of the left. At its sitting 1871, Dec. 30, the French Acad. at last admitted him to membership, to fill the place of Villemain: on this occasion, Dupanloup, bishop of Orleans, thought fit to resign his connection with the Academy. Médecine et Médecins was published by L. 1872. In 1875 he received honors from Leyden and from the Austrian Academy.

LITUITES, n. plu. $lit'\bar{u}$ - $\bar{\imath}ts$ [L. $lit\check{u}\check{u}s$, a trumpet]: in geol., a genus of chambered shells whose whorls are partially coiled up at the smaller end, and the last chamber is produced into a straight trumpet-like tube. Lituolites, n. plu. $lit'\bar{u}$ - \bar{o} - $l\bar{\imath}ts$, a genus of minute foraminifera having a spiral form, and straight prolonged outer whorl.

LITURGY, n. lit'er-ji [F. liturgie—from mid. L. litur's gia—from Gr. leitour'gia, a public service—from leitos, public; ergon, work, service]: printed formulary according to which the religious services of a church are performed. LITURGIC, a. li-ter'jik, or LITUR'GICAL, a. -ji-kăl, pertaining to a formulary of public devotions. Liturgiology, n. lit-ėr'ji-ŏl'ŏ-ji [Gr. logos, discourse]: treatise on liturgies of all ages.—Liturgy, in general, signifies a form of prayer and ceremonial established by ecclesiastical authority, to be used in the public services of the church, but is especially applied to that used in the celebration and administration of the Eucharist. The historical records of Christianity show that some such forms were in use in the early centuries, but it is highly probable that for a considerable period they were not reduced to writing; hence even those of the extant liturgies which represent the earliest forms differ considerably from each other, if not in the substance of the rite, at least in the arrangement even of those parts which are common to them all. There is no mention of any L. in the New Testament, nor any record of the establishment of any detailed form of service in the time of the apostles. The Lord's Prayer, the Baptismal formula, and various hymns used in worship, do not constitute a L. in the sense in which that term is universally applied. It is impossible to fix the date of the first establishment of a L. consisting of required and extended verbal forms proceeding in a certain order. Pliny the Younger, in his letter to Trajan, speaks of the Christians singing hymns to Christ and taking an oath (or as some render it, sacrament) binding themselves to a pure life. Justin Martyr, about 150, describes the order used at the observance of the Lord's Supper, probably in the church at Alexandria, but gives no verbal forms. It is evident that liturgies grew up here and there through constant familiar using and amplification of certain phrases of worship, some of which may have been commended by traditions of an apostolic usage; and that they began, as they in large part remained, around the eucharistic observance as their solemn cen-Special need for them was doubtless found in the general popular ignorance of those times, and in the scattered state of the Christian disciples in the early centuries. And a sufficient authorization for the usenot now to speak of an authoritative imposition—of forms of prayer, was found in Christ's setting forth of such a form, with the command, 'When ye pray, say --- '; together with the fact that for 'common prayer' in which an assembly may join their voices, some form of words known to all is requisite. Indeed, all hymns that are addressed to God are written forms of prayer or praise, and must be so if intended for use by a congregation in song. A theological discussion of ancient liturgies is important in a doctrinal view, and interesting for the study of Christian antiquities. The liturgies form the great stronghold of the Rom. Cath. controversialists on the real presence and the eucharistic sacrifice. We confine ourselves to a brief historical account of the various liturgies extant, and of their connection with the various ancient Christian communities. Liturgies may best be distributed into two classes, those of the

East, and those of the West.

1. Oriental Liturgies.—These are six in number, four derived from the great churches in which they were used; the fifth from the Armenian Church, which early formed a distinct L.; the sixth from the great Syrian sect of Nestorius, which modified the L. to its own peculiar tenets. These liturgies are severally known as the L. of Jerusalem, of Antioch, of Alexandria, and of Constantinople, the Armenian L., and the Nestorian. The diversities of these liturgies, though very great in appearance, yet can hardly be said to be substantial. Certain leading parts are common to them all without substantial variation; but they are arranged in different order, and, except in the form of the eucharistic consecration, the hymn Trisagion, and a few other details, the form of words is often entirely dissimilar. The L. of Jerusalem, though ascribed to the apostle James, is of uncertain origin and date; nor is it ascertained whether its original language was Syriac or Greek. The latter is the language in which it is now found, and the present L. closely corresponds in the main with that which formed the text of St. Cyril of Jerusalem in his well-known Mystagogical Lectures. The L. of Antioch exists in Syriac, but it is evidently only a free translation of the L. of Jerusalem. The ancient L. of Alexandria is ascribed to the evangelist Mark; but the existing L. has received numberless additions at later dates, and has been modified by both the great sects of this patriarchate to suit their peculiar doc-Several other liturgies are in use among the Copts, under the name of St. Basil, St. Gregory, and St. Cyril: and the Abyssinian Christians have no fewer than ten, which are distinct, at least in name. The church of Constantinople has two different liturgies, both of great antiquity, that of St. Basil, and that of St. Chrysostom. These, however, are not indiscriminately used, each being employed on special occasions or on certain defined festivals. The L. of Constantinople is the original of the Slavonic L. used in the Russian and Russo-Greek Church and its various branches. The Armenian L. dates from the introduction of Christianity into Armenia under Gregory the Illuminator. It is in most respects derived from that of St. Chrysostom. The Nestorians have three liturgies—the L. of the Apostles, of Theodore of Mopsuestia, and of Nestorius. however, are all combined into one, each being assigned to a particular season, or used on special occasions. The language of all is Syriac.

2. Western Liturgies. - The liturgies of the West pre-

LITURGY.

sent much less variety, and indeed all are derived either from the eastern liturgies or from a common source. What are known as the Catholic liturgies may be reduced to four—the Roman, the Milanese or Ambrosian, the Gothic or Mozarabic, and the Gallic. The oldest forms of the Roman L. are found in three so-called sacramentaries—that of Leo, that of Gelasius, and that of Gregory the Great. It is the last that has left its impress most clearly on the modern Roman missal, which was brought to its present shape by a commission ordered by the Council of Trent, after a careful revision and collation of all the liturgical forms in use in the West in the 16th c. The first revision took place under Pius V., and two subsequent revisions were made by Urban VIII. and Clement VIII. The Ambrosian L. is used only in the diocese of Milan, and is popularly traced to St. Ambrose. It bears a close analogy to the Roman L., but it has many peculiarities, some of which are highly interesting, as illustrating the history of the details of Christian worship. Its ceremonial, observed with great solemnity in the cathedral of Milan, is in some parts highly striking and characteristic. Gothic or Mozarabic is of still more limited use, being now confined to a single chapel at Toledo, founded and endowed for the purpose by the celebrated Cardinal Ximenes. It is the old L. of the Gothic Church of Spain; and after the infusion of the Arabic element, which followed the Moorish invasion, it was called by the name of Mozarabic, a word of disputed etymology. This L. is certainly of Oriental origin; but its history, and the time and circumstances of its introduction into Spain. have furnished matter for much speculation. Some parts of the rite are exceedingly curious, especially those which accompany the breaking of the host. The Gallican L. has no precise modern representative, and is known only from ancient forms, more or less complete, which have been edited by Mabillon, and recently by Mone. The older Gallican forms bespeak an Oriental origin, and are probably derived from the Greek Christian colony which settled at Marseille, Lyon, and the other churches of the south. The later forms approximate more to the Roman. Neither of these, however, is to be confounded with the more modern missals in use In several French dioceses, which do not differ from the Roman except in minor details, and most of which have now been displaced by the Roman missal. Of Protestant communities, the Anglican Church alone professes to follow the ancient liturgical forms (see Common Prayer, BOOK OF). Of late there is evident tendency among churches known as non-liturgical to introduce some liturgical forms, and many books of worship have been prepared in this view; but there seems no tendency in such churches to establish as imperative any such forms: these are merely interspersed with extemporaneous worship as occasion may require. See Renaudot's Orientali-

LITURGY.

un Liturgiarum Collectio, 1740, 2 vols; Assemanni's Bibliotheca Orientalis; Palmer's Antiquities of the English Liturgy; Binterim's Denkwürdigkeiten der Christ-Katholischen Kirche.

LIT'URGY, JEWISH: in the narrower sense of a ritual of fixed prayers, chiefly for public worship. The Mosaic records contain an ordinance respecting the 'confession of sins '(Lev. v. 5; xvi. 21), without, however, prescribing a distinct form for the purpose. Three formulas only are fixed—the benediction of the priests (Num. vi. 24-26), the prayer of thanksgiving on the occasion of the first offering (Deut. xxvi. 5-10), and that which was to accompany the offering up of the third year's tithe, beginning: 'I have brought away the hallowed things out of my house' (Deut. xxvi. 13-15). Although prayers are often mentioned before the Exile, yet they do not seem, except in the cases mentioned, to have been introduced as yet as a regular element into the service of the Temple. The songs of the Levites (I Chr. xvi. 4; xxiii. 3), and occasional prayers, such as are found in the I's alms, or like that of Solomon at the inauguration of the Temple, are all that are recorded. Private devotions were common (cf. I Kings, viii. 30, etc.; Is. i. 15), but every one prayed when his heart prompted him in the words inspired by his joy or sorrow. Not before the time of Daniel is a fixed institution of three daily prayers mentioned (Dan. vi. 11). The task of compiling a liturgy proper, and of fixing the times and seasons of prayer, was probably undertaken first by the men of the Great Synagogue. Two chief groups around which, as time passed, an enormous mass of liturgical poetry has clustered, are distinctly discernible—one, the Shemah, ('Hear, Israel, etc.'), being a collection of the three biblical pieces (Deut. vi. 4-9; xi. 13-21; Num. xv. 37-41) expressive of the unity of God and the memory of His government over Israel, strung together without any extraneous addition; the other, the Tefillah, or Prayer, by way of eminence (adopted into Islam as Salavat, Sur. ii. 40; cf v. 15), consisting of a certain number of supplications with a hymnal introduction and conclusion, and followed by the priestly blessing. The separate portions of this prayer gradually increased to 18, and the prayer itself received the name Shemonah Esre (Eighteen). The first additions to the Shemah formed the introductory thanksgiving for the renewed day, in accordance with the ordinance that every supplication must be preceded by a prayer of thanks, called Jozer (Creator of Light, etc.), to which were joined the three Holies (Ofan), and the supplication for spiritual enlightening in the divine law (Ahaba). Between the Shemah and the Tefillah was inserted the Geulah (Liberation), or praise for the miraculous deliverance out of Egypt and the constant watchings of Providence. A Kaddish (Sanctification), and certain psalms, seem to have concluded the service of that period. This was the order of the Shaharith, or

morning prayer; and very similar to this was the Maarib, or evening prayer; in the Minha, or afternoon prayer, the Shemah was omitted. On new moons, Sabbath, and feast days, the general order was the same as on week days; but since the festive joy was to overrule all individual sorrow and supplication, the intermediate portion of the Tefillah was changed according to the special significance and the memories of the day of the solemnity, and additional prayers were introduced for these extraordinary occasions, corresponding to the additional sacrifice in the temple, and varying according to the special solemnity of the day (Mussaf, Neïlah, etc.). The first compilation of a liturgy is recorded of Amram Gaon A.D. 870-880; the first that has survived is that of Saadja Gaon (d. 942). These early collections of prayers generally contained also compositions from the hand of the compiler, and minor additions, such as ethical tracts, almanacs, etc., and were called Siddurim (Orders, Rituals), embracing the whole calendar year, week-days and new moons, fasts and festivals. Later, the term was restricted to the week-day ritual, that for the festivals being called Machsor (Cycle). Besides these, were the Selichoth, or Penitential Prayers; Kinoth, or Elegies; Hoshanahs, or Hosannahs (for the seventh day of the Feast of Tabernacles); and Bakashoth, or Special Sup-

plications, chiefly for private devotion.

The public prayers were for a long time said only by the public reader (Chasan, Sheliach Zibbur), the people joining in silent responses and amens. These readers by degrees—chiefly from the 10th c.—introduced occasional prayers (Piutim) of their own, beside those used of The materials were from Halacha (q.v.) as well as from Haggada (q.v.): religious doctrine, history. saga, angelology, and mysticism, interspersed with biblical verses, are thus put together like a mosaic most original and fantastic, often grand and brilliant, and often obscure and feeble; and the pure Hebrew in many cases made room for a corrupt Chaldee. The two chief groups of religious poetry were, the Arabic and the French-The most eminent representative of German school. the Pajtanic age (ending about 1100) is Eleazar Biribi Among the most celebrated poets in his manner are Meshulam b. Kalonymos of Lucca, Solomon b. Jehuda of Babylon, R. Gerson, Elia b. Menahem of Mans, Benjamin b. Serach, Jacob Zom Elem, Eliezer b. Samuel, Kalonymos b. Moses, Solomon Isaaki. Of exclusively Spanish poets of this period the most brilliant are—Jehuda Halevi, Solomon ben Gabirol, Josef ibn Abitur, Isaac ibn Giat, Abraham ibn Esra. Mose b. Nachman, etc. When, however, in the beginning of the 13th c., secret doctrine and philosophy, casuistry and dialectics, became the paramount study, the cultivation of the Piut became neglected; and few, and generally insignificant, are the writers of liturgical pieces since.

According to the different countries, the order and

even the contents of the cyclo differed, since not all liturgical pieces had been incorporated uniformly. We have thus—to name a few out of many—the rituals of Germany (Poland), of France, Spain, and Portugal (Sefardim), Italy (Rome), the Levant (Romagna), and even of some special towns, like Avignon, Carpentras, Montpellier. The rituals of Barbary (Algiers, Tripoli, Oran, Morocco, etc.), are of Spanish origin. The Judæo-Chinese liturgy consists only of pieces from the Scriptures. The Jewish liturgy has, in its various forms, very frequently been commented upon, and has been translated into nearly every modern language.

Liturgy forms at this moment the centre of a great contest within the pale of Judaism. The 'reformers' of more or less advanced tendencies are intent on shortening the prayers, and principally on abrogating the greater part of the Piut, as an artificial excrescence

hurtful to true devotion.

LIU-KIU', or LIU-TCHIU': see Loo-Choo.

LIUTPRAND, lôt'prând, or LIUDPRAND, lôd'prând, or LUITPRAND, lô'it-prând: chronicler: about 952-972; b. Lombardy. He was educated at the court of King Hugo, and entered into the service of his successor, Berengarius; butfalling into disgrace at courtabout 955, resided for some years at Frankfurt-on-the-Maine, followed Emperor Otto I. to Italy 961, and was made Bp. of Cremona, and afterward sent on an embassy to Constantinople. His Antapodosis treats of the period 886 to 948. He wrote also De Rebus Gestis Ottonis Magni Imperatoris, and De Legatione Constantinopolitanâ. The best edition of his works is in Monumenta Germaniæ (1839, separately published 1877). See Köpke, De Vita Liutprandi (1842).

LIVADIA, *liv-â-thē'a* (ancient *Lebadeia*): town of Greece, about 60 m. n.w. of Athens. Pop. 5,000. From this place the n. part of the present kingdom of Greece was, in Turkish times, called Livadia.

LIVADI'A: estate and palace-villa on the s. coast of the Crimea; belonging to the Empress of Russia, and the favorite summer residence of the imperial family. L., which stands near the site of an old town so named, is charming by reason of its climate, its picturesque situation, and the magnificent parks and gardens which surround it.

LIVE. v. liv [from Life, which see: Ger. leben; Dut. leven; Goth. liban, to live: Icel. lifa, to be left, to remain behind]: to exist or have being; to feed or subsist; to continue in; to dwell; to have a settled residence in any place; to reside with; to continue or endure; to flourish; to remain undestroyed; in Scrip., to be exempt from spiritual death; to attain or approach to immortality. Liv'ing, imp.: Add. not dead; existing; continuing; running; flowing; producing animation and vigor; quickening: N. means of subsistence; mainte-

LIVE-LIVELODE.

nance; power of continuing life; manner of life; benefice of a clergyman. Lived, pp. livd. Liv'ingli, ad. -li, in a manner to express actual life; in the living state. THE LIVING, those who are alive as distinguished from the dead. A LIVING, means or income for subsistence; church preferment. Liv'er, n. one who lives. a. $l\bar{\imath}v$, having life; not dead; active. Live-stock, $l\bar{\imath}v$ -, animals for rearing or exportation. LiveLong, a. $l\bar{\imath}v'$ long, that lives or endures long; tedious; lasting. Live-LY, a. līv'lī, vigorous; active; sprightly; animated; energetic: Ap. briskly; vigorously. Live'Liness, n. -nĕs, sprightliness; animation; activity. To LIVE DOWN, to live in such a manner as to cause people to forget, or not remember unpleasantly, some slur on the character or reputation. To LIVE WITH, to dwell with; to cohabit. Note.—The older sense of LIVE is 'to remain; to be left, behind.'—Syn. of 'live, v.': to exist; be; subsist; feed, continue in; abide; reside; remain; last;—of 'liveliness': gayety; vivacity; smartness; briskness; effervescence;of 'lively': cheerful; merry; gay; mirthful; jovial; vivacious; sportive; brisk; quick; nimble; smart; alert; active; spirited; strong; prompt; vivid; jocund; airy; blithe; gleeful.

LIVE, a. liv [an abbreviation of ALIVE]: having life; not dead; active; burning.

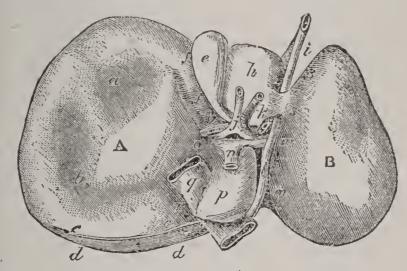
LIVELIHOOD, n. *līv'lĭ-hûd* [properly OE. *lifelode* or *livelode*, way of life, means of living—from Icel. *leid*; AS. *lad*, way]: means of living or support; maintenance.—Syn.: living; subsistence; support; sustenance.

LIVELODE, n. $l\bar{\imath}v'l\bar{o}d$ [AS. $lifl\acute{a}d$, manner of living: see Livelinood]: in OE. maintenance; support; livelihood,

LIVER, n. liv'er [AS. lifere; Dut. lever; Icel. lifr; Ger. leber, liver: Russ. liver', the pluck or liver]: the organ of the body of a deep-red color lying under the ribs, which secretes bile (see below). LIVER-COLORED, dark or brownish red. Liver of sulphur, a fused mixture of several sulphides of potassium, so named from its liver color. LIVER ORE, a dark liver-colored variety of sulphuret of mercury. LIVER PYRITES, a familiar term for a liver-colored concretionary variety of sulphuret of iron. LIVERWORT, -wert, the popular name of the subord. Marchantiew, ord. Hepaticw.

LIV'ER, THE: largest gland in the body; weighing three to four lbs., and measuring about 12 inches from side to side, and six or seven inches from its anterior to its posterior border. It is in the right hypochrondriac region, and reaches over to the left; being thick and indented behind, where it crosses the convex bodies of the vertebræ; convex on its upper surface, where it lies in the concavity of the diaphragm; and concave below, where it rests against the stomach, colon, and right kidney. This lower surface presents a fissure dividing the organ into a right and a left lobe.

The L. is retained in its position by five ligaments. Besides the right and left lobe, there are three smaller



The Liver:

A, right lobe; B, left lobe: a, depression for colon; b, depression for right kidney and capsule; cc, coronary ligament, inferior layer; dd, surface uncovered by peritoneum; e, gall-bladder; ff, fissure for gall-bladder; gq, transverse fissure; h, lobulus quadratus; i, umbilical vein; j, hepatic duct; k, hepatic artery; l, ductus venosus; mm, fissure for ductus venosus; n, vena portæ; o, lobulus caudatus; p, lobulus Spigelii; q. inferior vena cava; r, fissure for inferior vena cava; ss, longitudinal fissure.

lobes. The bulk of the organ is made up of the right

lobe, which is six times as large as the left.

The vessels of the L. are the hepatic artery, which comes off from the Celiac Axis and supplies the organ with nutrient blood; the Portal Vein, which conveys to the L. the venous blood of the intestines, spleen, and stomach, and from which (after the vessel has ramified like an artery) it has long been believed that the

bile is secreted; the hepatic veins, which convey the blood from the L. into the inferior vena cava; the hepatic duet, which carries off the bile from the L.; and the lymphatics. Recent investigations have shown reason for a change of view as to secretion of the bile: it is now believed that the bile is secreted from the capillaries of the hepatic artery, while the portal blood contributes the material from which the liver-sugar or glycogen is formed or secreted; though this view in turn has re-

ecived important modifications. The L., both on its surface and internally, is of a dark reddish tint, so well known that the term liver-colored is universally recognized. The substance of the organ is composed of lobules held together by extremely fine areolar tissue, and ramifications of the minute branches of the various hepatic vessels. Each lobule is composed of a mass of hepatic cells, of a plexus of biliary ducts, of a portal plexus (from the contents of which the eells obtain the biliary matters that are found in their interior), of a branch of the hepatic vein, and of minute The exact mode in which the bile formed in the cells makes it way into the origin of the ducts, is not The numberless minute duets gradually run into one another, until, as they emerge from the lower surface of the L., they are reduced to two large trunks, which soon unite (see fig.) to form the hepatic duct. Into the hepatic duct, the eystic duct from the neck of the gall-bladder (presently to be described) enters, and the two combine to form the common duct (Ductus communis choledochus), which opens into the duodenum (see Digestion). This common excretory duct of the L. and gall-bladder is about three inches in length, and of the diameter of a goose-quill.

Recent investigations of the chemical composition of the L. show that the organ in health contains 68.6 per cent. of water, and 31.4 per cent. of solid constituents—of which 3.8 are fat, 4.7 albumen, while the rest is made up of vessels, salts, and extractive matters. (In the diseased condition known as fatty degeneration of the L.—artificially induced in the geese which contribute to the formation of Strasburg Pie, or pâté de fois gras—the fat is enormously increased; in one remarkable case analyzed by Dr. Beale, it amounted to 65.2 per cent. of the whole weight of the organ). Sugar, varying in amount from 1 to 2 per cent., is found; and inosite, uric acid, sarcine, xanthine, and leucine usually occur in

tracés.

The gall-bladder may be regarded as a diverticulum or offshoot from the hepatic duet. It has somewhat the shape of a pear, and lies in a depression on the under surface of the liver. Its use seems to be to serve as a reservoir for the accumulation of the bile, when its flow into the intestine is interrupted, as it is always found full after a long fast, and empty when digestion is going on. That the gall-bladder is not an essential appendix

to the L. is shown by the fact that it is absent in many genera of mammals. Thus, it is present in the ox, sheep, and goat, but absent in the horse and many other herbivora.

It was formerly believed that the L. served merely for separation of the biliary secretion from the blood; but there is now abundant evidence that the blood itself is changed by its means, in such a way as to show that this gland possesses an assimilating as well as a depurating Thus, the albuminous matter contained during digestion in the blood of the veins which passes from the intestines to the portal vein (the mesenteric veins), is very different from the albuminous matter contained in the hepatic veins; the blood, before reaching the L., containing a crude albuminous product, while the hepatic veins contain only true blood-albumen. That the L. possesses an assimilating power on albuminous substances is shown also by the experiments of Claude Bernard, who found that if a solution of egg-albumen be injected into any part of the systemic circulation, albumen speedily appears (like other soluble substances which are foreign to the body), in the urine, and is eliminated as an extraneous matter; but if it be injected into the portal vein, it does not appear in the urine, but becomes a normal constituent of the blood (blood-albumen), through the agency of the liver. It is now also known, that if the L. does not secrete a true sugar, as Bernard supposed, it at all events secretes a substance closely allied to, and readily convertible into, sugar—viz., Glycogen (q.v.)—which must be regarded as a respiratory or heat-forming food. Further, it appears from Bernard's researches that fatty matters are elaborated in the L.—the blood of the hepatic veins which leave the L. containing considerable more fat than that of the portal vein which enters it. Some of this fat is doubtless burned off in the lungs; but if a deficient supply should be introduced by the lacteals, some of it would doubtless be applied to the formative processes. Lastly, during the last three days of incubation of the chick, the L. is made bright yellow by the absorption of the yelk, which enters the branches of the portal vein, and is then converted partly into blood-corpuscles, which enter the circulation, and partly into bile, which is discharged into the intestine. Hence, there is distinct evidence, from several points of view, that the L. is an assimilating organ. The depurating action of this organ is exhibited in the secretion of Bile (q.v.), by which the hydro-carbonaceous portion of the effete matters of the blood is removed, as the nitrogenous portion is eliminated by the kidneys. For the use of the bile in the digestive process, see DIGESTION.

This important gland shows itself first in the form of yellowish brown cells in the polyps, and gradually becomes more concentrated and developed in the echinoderms, annelides, nudobranchiate gasteropods, insects,

crustaceans, air-breathing mollusks, cephalopods, fishes, reptiles, birds, and mammals. Till we arrive at the vertebrated classes, it consists of tubes or follicles containing cells, which stand to them in the relation of an epithelium, and its structure is easily made out; but when, as in the vertebrata, it is composed mainly of a solid parenchyma, made up of lobules, each of which is composed of aggregations of cells surrounded by the alternate ramifications of the ducts and other vessels, it presents an anatomical complexity almost impossible to unravel.—see BILE: CELL-THEORY: CHOLESTERINE: LYMPHATICS.

DISEASES OF THE LIVER.—Congestion of the liver is one of the most frequent of its morbid conditions. It is most commonly caused by obstruction to the passage of the blood from the hepatic veins, arising from thoracic disease impeding the circulation through the right side of the heart. The congestion may be relieved at this stage, or may, by its obstructive action, cause congestion of the portal branches, in which case the L. becomes much enlarged, the complexion dusky, the urine high colored, sedimentary, and scanty, and often there is more or less dropsy of the abdomen or lower extremities. The treatment must be left entirely to the physician.

For Inflammation of the L., see HEPATITIS.

Cirrhosis [Gr. kirrhos, yellowish] is another important affection of the liver. It begins as an inflammatory affection in which lymph (see Inflammation) is effused in the areolar tissue surrounding the branches of the The smaller branches become obliterated portal vein. by the pressure, and as the lymph subsequently contracts, larger branches of the veins and ducts become strangulated, and the surface of the organ assumes the uneven or bossed appearance known as hobnailed. this affection the L. is at 'first somewhat enlarged, but as the contraction of the effusion goes on, it at length becomes considerably smaller than the natural size. The ordinary cause of this disease is spirit-drinking, and it is popularly known as gin-drinker's liver. The obstruction to the portal circulation occasions the effusion of serum into the peritoneal cavity; and this effusion often goes on so rapidly as soon to force up the diaphragm and impede respiration. The lower extremities soon become anasarcous, but the arms and face are never af-The portal obstruction often also gives rise to hemorrhage from the bowels or stomach.

In a fully developed case of cirrhosis, the L. is so altered in structure that palliative treatment is all that can be attempted. This must be directed to the relief of the dropsy, and if medicine fails to remove or diminish it, temporary relief may be obtained by tapping.

The disease is hopeless.

Among the affections of this organ are the fatty liver: the L. in this case is much enlarged, of white color, and rounded at the edges; it is commonly found associated

LIVERMORE.

with phthisis. Closely allied to this is the laraaceous or waxy liver, in which the deposited matter is not fat, but something between fat and albumen; it occurs chiefly in scrofulous young persons. Tubercle, different forms of cancer, and Hydatids (q.v.) are not infrequent in this organ.—See JAUNDICE.

LIVERMORE, liv'er-mör, Mary Ashton (Rice): author: b. Boston, 1821, Dec. 19. She was educated in the Charlestown Female Seminary, Mass.; taught several years there, in s. Va., and in Duxbury, Mass.; married the Rev. Daniel P. L. (Univ.); and for many years aided him in editing the New Covenant in Chicago; edited the Lily, and contributed to the editorial pages of various Univ. periodicals. During the civil war she was an agent of the U. S. Sanitary Commission, and active in field and hospital work. After the war she became a popular lyceum lecturer, and conspicuous in the temperance and woman suffrage movements. Her lectures include What shall we do with our Daughters? Women of the War, and The Moral Heroism of the Temperance Reform; and her publications, Pen Pictures (Chicago 1865), Thirty Years too Late (Boston 1878), and her lecture What shall we do with our Daughters? (Boston 1883).

LIVERPOOL.

LIVERPOOL, liv'er-pôl: city and sea-port of England, county of Lancashire; on the n. bank of the estuary of the Mersey: after London, the largest town in the United Kingdom; and in connection with Birkenhead, on the opposite side of the Mersey, ranking in maritime importance before the metropolis itself—by reason of its position on the w. coast of England, not only as a port for the adjacent manufacturing districts, but for the traffic with America. It is one hour's distance by rullway from Manchester, five hours from London, six hours from Edinburgh, and eight hours by steam from Dublin. The rise of L. is remarkable. In the middle of the 14th c. it contained only 840 inhabitants and 168 cottages: 1561 its pop. was only 690. It was not until 1647 that it was made a free port (having been subject till that date to the Chester officers): and its distinct individuality as a parish was not declared until 1697, when its pop. numbered about 5,000 souls, and its shipping about 80 vessels. 1710-60 its pop. increased from 8,160 to 25,780; and its commercial navy from 84 vessels to 1,245 vessels. In 1700, its first regular dock was built, on the site where the Custom-house now stands. 1760–1800, the pop. advanced from 25,700 to 77,700 inhabitants; the shipping from 1,200 vessels to 5,000 vessels; and the amount of dock dues collected, from £2,300 to £28,300; nearly twothirds of the increase being during the last 15 years of the period. The rapid progress of the cotton trade was the chief cause of this improvement. Simultaneously with the mechanical revolution brought about by Hargreaves, Arkwright, Crompton, and others, there came an increased foreign trade, and an augmented inland business, by the opening of the Bridgwater Canal 1773. About the same period, too, a great start was given to the ship-building trade of the port, by several extensive orders received from the government: some 15 vessels of war being launched between 1777 and 1782, of considerable tonnage, and ranging between 16 and 50 guns. By this time L. had far outstripped Bristol in commercial importance: the trade of the latter port being in process of rapid transference to the former. The commerce of L. with the United States exceeds that of any other country. Of a total tonnage of 11,119,976 tons, entered and cleared from Liverpool (1892), one-half was rep esented by vessels from United States ports. The imports received in the United Kingdom (1892) aggregated \$2,118,969,410, and of these nearly \$550,000,000 were landed at L. They included 20,376,294 cwt. of wheat; 14,863,493 cwt. of raw cotton; 8,917,203 cwt. of Indian corn; 5,999,985 cwt. of unrefined sugar; 3,220,831 cwt. of hog products; 29,609,588 lbs. of unmanufactured tobacco, and 271,686 live cattle and sheep. The total customs duties paid at L. for the year (1892) were \$14,792,040. Of the goods exported from L. (1892) the principal were cotton goods \$178,466,940; linen \$10,744,730; woollens and worsteds \$35,829,705; hardware \$37,773,180; drugs \$10,878,810. Total exports (1892) \$450,836,810.

LIVERPOOL.

Of the shipping that entered L., exclusive of the coasting trade, there were (1892) 4,272 vessels, most of which were British and belonged to that port. The total tonnage of the vessels belonging to the port was 2,095,491. Engaged in the coasting trade (1892) there entered L. 12,782 ships of 2,656,239 tons; cleared 13,143 ships of 3,210,308 tons. With the suburbs of Birkenhead and Bootle, the pop. (1891) was 667,054. L. has most exports and most tonnage; while London has most imports, most ships, and most entered and cleared.

The gigantic trade of L. has caused the construction of the magnificent system of docks, extending along the margin of the river about 5 m., containing 54 docks and basins, covering 333 acres, and having 22 m. of quay space. The Birkenhead docks are of about half the size. whole of these docks, with the exception of the Salthouse, King's, part of the George's, and part of the Queen's, have been built since 1812. They are considered among the great engineering triumphs of the present century. Several of the docks are inclosed with large warehouses: the erection of those round the Albert Dock cost £358,-000, and the dock itself £141,000. In addition to the usual pier approaches, there are two large floating landing-stages, one of which is 2,063 ft. in length, 80 ft. in width, and 4,500 tons in weight. The new north docks at Bootle were opened 1881. The steamer traffic with United States, Canadian, S. American, Mediterranean, Australian, and other ports, draws large numbers of passengers to the town. L. has direct railway connection with several great English railways, and with a number of There are five tunnels under the minor and local lines. Several of the passenger stations are handsome The Mersey railway tunnel, 1,230 yards long, connecting L. and Birkenhead, was begun in 1881, and opened by the Prince of Wales 1886. In 1881, the foundation-stone of new waterworks was laid at Lake Vyrnwy, about 25 m. from Oswestry, 46 m. in a straight line from L. (For history, see Sir J. A. Picton's Memorials of Liverpool.)

The architecture of the town has been wonderfully improved within 40 years, especially within 20 years, and it now possesses many fine thoroughfares, with numerous splendid edifices. There are several large and elegant squares in the e. or fashionable part of the town, and a number of thoroughfares, lined with residences of merchants and tradesmen; while the outskirts of the town are studded with the mansions of the commercial aristocracy. Of what may be termed the official buildings -the town hall, St. George's Hall, public offices, customhouse, Sailors' Home, police-offices, workhouses, baths and wash-houses, waterworks, and the gas offices are most noteworthy; next follow the various literary and educational edifices, such as the Free Library and Museum, presented to the town by Sir William Brown, at a cost of £40,000; the Walker Art Gallery, presented by A, B, Walker, Esq., at a cost of £30,000; Botanic Gar-

LIVERPOOL.

dens, Observatory, the Liverpool College, Liverpool Institute, Queen's College, Medical Institute, Royal Institution, the various schools attached to the national and other churches, Acad. of Fine Arts, the Exchange, Lyceum, and Athenæum, news-rooms and libraries, and numerous associations, commercial, political, and religious. There are about 100 charitable institutions in the borough devoted to the alleviation of the various evils that flesh is heir to: among the more prominent are the Royal Infirmary, Northern and Southern Hospitals, Industrial Schools, Blue Coat Orphan Schools; Male, Female, and Infant Orphan Asylums and Church; School, Workshops, and Church for the Blind; Deaf and Dumb, and Eve and Ear Institutions; Homeopathic and other dispensaries; Lying-in and other hospitals. Visitors will find no lack of hotel accommodation, with such immense establishments as the North-Western, Adelphi, Washington, Queen's, Alexandra, Royal, Angel, and a score or two of minor importance. Among buildings dedicated to amusements are the Philharmonic Hall, accommodating 3,000 people; the Alexandra Theatre; the Amphitheatre, calculated to hold 5,000; the two concert-rooms of St. George's Hall, before alluded to, the larger of which is acknowledged to be one of the finest rooms in the kingdom; St. James's Hall; the Queen's Hall; the Theatre-Royal; Prince of Wales' Theatre; Rotunda Theatre; Adelphi Theatre; Circus, etc. Here is a reading-room presented by Sir J. A. Picton; the late Earl of Derby's zoological collection; and Mr. Mayer's collection of antiquities. University College, on the model of Owens College (q.v.), was inaugurated 1882; the endowment at that date amounting to more than £100,000. Since 1880, L. is the see of a bishop. In L. are some 90 churches and chapels of the Church of England, 30 Catholic chapels, above 20 Presbyterian, 30 Wesleyan, 20 Congregational, 16 Baptist, besides some 50 others. There are 11 cemeteries. There is a large Irish element in the pop. of L., and the Rom. Cath. Church is strong in numbers and position.

The many buildings for commercial pursuits are very fine, and interesting to the stranger. Among these are the Exchange, the Albany, Apsley, Brown's, Richmond, Hargreaves, Liverpool and London Insurance Chambers, Royal Insurance, and Queen Insurance buildings (all local companies), Manchester, Knowsley, Walmer, Drury, Tower, India, and Brunswick buildings, and many others. There are 12 banks in the town, several having very large and handsome business premises; e.g., the branch of the Bank of England, and the Liverpool, Union, District, Commercial, National, and North and South Wales banks. In the principal streets are also several very extensive trade establishments for every department of business, wholesale and retail. Of monuments the chief are those of the Queen, Prince Albert, Nelson, Wellington, Huskisson, and William IV., besides several in the

LIVERWORTS-LIVERY.

town hall, St. George's Hall, Free Library, and parks. The parks are four in number, the Stanley, Sefton,

Prince's, and Botanic.

The stated market days are Wednesday and Saturday, for general agricultural produce, and Tuesday and Friday for corn. The fairs for horses and cattle are held July 25, Nov. 11. The corn trade transacts its business in the Corn Exchange, Brunswick St., and there is an extensive market for the cattle-dealers in Kensington. For agricultural produce there is the Northern Hay Market. For edibles of all kinds there are St. John's Market, 183 yards long, 43 yards wide, and lighted by 136 windows; St. James's, Gill St., and St. Martin's markets; there is also a fish market, and several fancy There are 6 daily and 7 weekly newspapers, besides the Daily Telegraph and Bill of Entry, exclusively for shipping matters, and three weekly literary periodicals. L. has extensive ship-building yards, iron and brass foundries, chain-cable and anchor smithies, engineworks, tar and turpentine distilleries, rice and flour mills, tobacco, cigar, and soap manufactories, breweries, sugar refineries, roperies, glass-works, chronometer and watch manufactories. Pop. (1881) 522,425; (1891) 629,-548; (1901) 684,947.

LIV'ERWORTS: see HEPATICÆ.

LIVERY, n. līv'er-i [F. livrée, something given out in stated quantities at stated times to servants, as clothes, or the supply of victuals or horse-provender-from livrer, to deliver—from mid. L. liberāre, to deliver, to give freely]: the uniform worn by servants; the state of being kept and fed at a certain rate, as horses; the body of liverymen in the city of London; in OE., and in law, the act of giving or taking possession; delivery; writ by which possession is obtained, e.g., 'livery of seisin' (see FEOFFMENT): V. to clothe in a livery or distinctive dress. LIV'ERYING, imp. LIV'ERIED, a. -ėr-id, wearing a livery. LIVERY-SERVANTS, servants who wear distinctive dresses provided by their masters. LIVERY-STABLE, a stable where horses are kept and maintained for hire. LIV'ERYMAN, n. -ĭ-măn, a freeman of the city of London, entitled to wear the distinguishing livery-gown of his company on certain occasions, and to enjoy certain priviliges. The LIVERY, the whole body of liverymen in the city of London.—The word Livery referred in its origin to the custom under the Merovingian and Carlovingian kings, of delivering splendid habits to the members of their households on great festivals. In the days of chivalry, the wearing of livery was not, as now, the special characteristic of domestic servants. The duke's son, as page to the prince, wore the prince's livery, the earl's son bore the duke's colors and badge, the son of the esquire wore the livery of the knight, and the son of the gentleman that of the esquire. Cavaliers wore the livery of their mistresses. There was also a large class of armed retainers in livery attached to many of

LIVES-LIVING.

the more powerful nobles, who were engaged expressly to use the strong hand in their masters' quarrels. the colors and badge of the retainer was known the master under whom he served. The livery colors of a family are taken from their armorial bearings, being generally the tincture of the field, and that of the principal charge, or the two tinctures of the field are taken instead, where it has two. They are taken from the first quarter in case of a quartered shield. These same colors are alternated in the Wreath (q.v.) on which the crest stands. The royal family of England have sometimes adopted colors varying from the tinctures of the arms. Plantagenets had scarlet and white; the House of York, murrey and blue; white and blue were adopted by the House of Lancaster; white and green by the Tudors; yellow and red by the Stuarts, and by William III.; and scarlet and blue by the House of Hanover. An indispensable part of the livery in former times was the Badge (q.v.). The Church of Rome has its liveries for apostles, confessors, martyrs, virgins, and penitents.

The freemen of the 91 guilds or corporations which embrace the different trades of London, are called liverymen, because entitled to wear the livery of their respective companies. In former times the wardens of the companies were accustomed yearly to deliver to the lord mayor certain sums, 20 shillings of which was given to individuals who petitioned for the money, to enable them to procure sufficient cloth for a suit, and the companies prided themselves on the splendid appearance which their liveries made in the civic train. The common-councilmen, sheriffs, aldermen, and some other superior officers of the city, are elected by the liverymen of London; and till the Reform Bill 1832, they had the exclusive privilege of voting for members of parliament for the

city. See Guild.

LIVES, n. līvz: plu. of Life, which see.

LIVID, a. līv'īd [F. lividė—from L. livīdus, livid: It. livido]: discolored in the flesh, as from a blow; black and blue; of a lead color. Liv'idness, n. -nēs, or Lividity, n. līv-īd'ī-tī, state or quality of being of a black-and-blue color.

LIVING: see under LIVE.

LIVINGSTON.

LIVINGSTON, liv'ing-ston, Brockholst, Ll.D.: 1757, Nov. 25—1823, Mar. 18; b. New York. He graduated at Princeton 1774. Entering the army as aide-de-camp to Gen. Schuyler, he afterward became major under Gen. Arnold, was present at the surrender of Burgoyne, and was promoted to the rank of col. before he left the army. He went to Spain as sec. to John Jay 1779. Returning 1782, he studied law, was admitted to the bar next year; and appointed a judge of the N. Y. supreme court 1802. After four years he was appointed a justice of the U. S. supreme court, and held the office till his death at Washington.

LIV'INGSTON, EDWARD: jurist and statesman: 1764, May 26—1836, May 23; b. Livingston (afterward Clermont), Columbia co., N. Y.; of a family which, for nearly a century, had been of great distinction in the colony (see Livingston, John). L. was son of Robert L., judge of the supreme court of New York, and youngest of a very numerous family. He graduated at Princeton College 1781, and studied law under his brother, Robert R. L., 18 years his senior (see below), and gave special attention to Roman jurisprudence. He was called to the bar, and soon obtained extensive practice. He had spent his youth among the founders of American independence, whom he had known as visitors of his father, and he at once attained a prominent position. He was elected a member of congress 1794; federal attorney and mayor of New York 1801; and he would probably have been known only as a prosperous lawyer, had not a great misfortune at this period befallen him. L., as federal attorney, was intrusted with the collection of debts to the state recovered by legal proceedings. He had the greatest aversion to accounts, and intrusted this part of his duty to a clerk, a Frenchman, who appropriated the funds to his own purposes. When L. discovered what had happened, he at once ascertained the balance due to the state, handed over his whole property to his creditors, threw up his appointment, and resolved to quit New York. No entreaty on the part of his fellow-citizens could induce him to remain. Louisana had just been annexed to the United States, through negotiations conducted by his brother at Paris, and he resolved to settle in the new state. He joined the New Orleans bar 1804, and at once obtained a lucrative practice. He had great difficulties to encounter. The business had to be conducted partly in French and Spanish. The law administered was a strange compound of municipal regulations, Spanish and French law, and the Roman law of the civilians. A proposal was made to introduce the common law of England, and this would have been much to the pecuniary advantage of L., but he opposed the scheme in an eloquent and convincing speech to the legislature of La., and it was decided that the law of the state should remain based upon the civil rather than the common law. In the dispute with England 1814-15, L. became aide-

LIVINGSTON.

de-camp and sec. to Gen. Jackson, and attracted much notice by the admirable bulletins that he wrote during the campaign. In 1820, he was appointed to draw up a code of civil procedure for Louisiana. It was the simplest known till that time, was found to work admirably, and received the warmest approval from Bentham and other jurists. L. was then employed in reducing to system the civil laws of Louisiana. He had to aid him in the task the French and other modern codes, the nomenclature of Scotch law, and a familiar acquaintance with all that is most valuable in English jurisprudence, and the work produced, the 'Civil Code of Louisiana,' is undoubtedly the most successful adaptation of the civil law to the conditions of modern society. It was adopted in La. 1823, and has since become the law of many other states. L. was then employed to prepare a new criminal code, and in a preliminary treatise he laid down the principles on which he was to proceed. He proposed the abolition of the punishment of death, and a penitentiary system, which at once drew general attention to His book was reprinted in London, transhis labors. lated into French, and made a sensation all over Europe, and the author received the congratulations of the most eminent publicists and politicians of England, France, and Germany. His code of crimes and punishments was completed, but not adopted without modifications. was elected 1829, U. S. senator from La., and 1831 appointed sec. of state under Pres. Jackson. Two years later, he went to France as U.S. minister plenipotentiary to support a demand for \$5,000,000, made by the U. S. govt. for indemnity on account of French spoliations, and he succeeded in securing payment. married a lady of New Orleans of French family and education, had been long conversant with the French language, in which he had been accustomed to plead before the courts of New Orleans, and he became intimately acquainted with the leading jurists and politicians of France. He was admitted an associate of the Acad. of Moral and Political Sciences, and received the warmest tribute of respect as one of the greatest philosophical lawyers of his time, though his distinction at home had been won chiefly as a careful and painstaking man of L. died at his own estate on the Hudson, in consequence of drinking cold water when he was overheated.—See notices of his life in French by M. Tail landier and by M. Mignet; Life, by C. H. Hunt; and complete Works (2 vols. 1873).

LIVINGSTON, HENRY BEEKMAN: soldier: 1750, Nov. 9—1831, Nov. 5; b. Clermont, N. Y.; son of Judge Robert R. L. In 1775, Aug., he raised a company of militia and accompanied his brother-in-law, Gen. Richard Montgomery on his expedition to Canada, and for his gallantry at the capture of Chambly was voted a sword of honor by congress. He was appointed aid to Gen. Philip Schuyler, 1776, Feb., and col. of the 4th

LIVINGSTON.

battalion of N. Y. vols. Nov.; served with Lafayette in Rhode Island and at Valley Forge; and resigned from the army 1779. After the war he practiced law, and held the offices of atty.gen., judge and chief justice of the N. Y. supreme court, and pres. of the N. Y. Soc. of the Cincinnati. He was appointed brig.gen. in the war of 1812–15.

LIVINGSTON, John: eminent Scotch Presb. clergyman: b. Kilsyth, Scotland, 1603, June 21. He preached in Ireland, and was one of two commissioners sent by the Scotch Kirk to Breda, Holland, to treat with Charles II. Refusing to take the oath of allegiance, he was banished, and went 1663 to Holland, where he spent his closing years as pastor of the Scotch Kirk at Rotterdam. He was author of several works, of which the best known is his Autobiography. He was ancestor of the L. family of N. Y.: see Livingston, Edward: etc.

LIVINGSTON, Philip: 1716, Jan. 15—1775, June 12: b. Albany, N. Y.: signer of the Declaration of Independence. He graduated at Yale 1737, engaged in mercantile business in New York, was alderman 1754–63, member of the provincial assembly, delegate of the stamp-act congress 1765, member of the first continental congress 1774, pres. of the provincial congress 1775, Apr., and one of the N. Y. delegates that signed the Declaration of Independence. In 1777, he was a state senator, and was elected to the first federal congress. He was a founder of the New York chamber of commerce, and the New York Soc. library, one of the first govs. of the New York hospital, urged the establishment of the present Columbia College, and aided in erecting the first Meth. church in the United States.—His brother, William L., Ll.d.; 1723, Nov. 30—1790, July 25; b. Albany; graduated at Yale 1741, was admitted to the bar 1748, settled near Elizabethtown, N. J., 1760, was delegate to the first three continental congresses, became brig.gen. and commander-in-chief of N. J. militia 1776, June, and was gov. from Aug. following till his death.

LIVINGSTON, ROBERT R.: eminent lawyer and statesman: 1746-1813, Mar. 26; b. New York; son of Robert L. and bro. of Edward L.; lineal descendant from the fifth Lord L. (who was appointed guardian of Mary, Queen of Scots) and from Lord L.'s grandson, the Rev. John L., minister of Ancrum, Teviotdale, distinguished Presb. divine (see Livingston, John). John's son Robert L. (b. Ancrum, 1654) emigrated to America while a lad, settling in the then Dutch village of Albany, on the Hudson. Later, he bought from the Indians a vast tract of land, more than 160,000 acres on the banks of the river; and this property he had erected into the township and manor of Livingston.' His great-grandson, Robert R. L., graduated at King's (now Columbia) College, N. Y. He was one of the five members of the

LIVINGSTONE.

committee of the congress who had in charge to draw up the Declaration of Independence. When the constitution of N. Y. was settled, he was appointed chief judge (chancellor), and retained the office till 1801. then sent to Paris as minister plenipotentiary to negotiate the cession of Louisiana to the United States, and discharged that duty with rare ability, securing to the United States the vast territory between the Mississippi and the Rocky Mountains, extending from the Spanish to the British possessions. This was censured as a rash and useless purchase; and soon afterward L. withdrew from public life. He had rendered his country a service of incalculable importance, for which he had received only censure. He encouraged and enabled Fulton to construct his first steamer, and introduced in America the use of sulphate of lime as a manure, and the merino sheep.

LIVINGSTONE, liv'ing-ston, DAVID: African explorer and Christian missionary: 1813, Mar. 19—1873, May 1; b. Blantyre, Lanarkshire, Scotland; of family humble but self-respecting. At the age of 10 he became a 'piecer' in a cotton-factory, and for many years was engaged in hard work as an operative. An evening school furnished him with the opportunity for acquiring some knowledge of Latin and Greek, and, finally, after attending a course of medicine at Glasgow Univ., and the theological lectures of Dr. Wardlaw, prof. of theol. to the Scotch Independents or Congregationalists, he offered himself to the London Missionary Soc. (Nonconformist) by which he was ordained as a medical missionary 1840. In the summer of that year he landed at Port Natal, s. Africa. Circumstances made him acquainted with the Rev. Robert Moffat, a distinguished missionary whose daughter he subsequently married. For 16 years L. proved himself a faithful and zealous servant of the London Missionary Society. The two most important geographical results achieved by him in this period were the discovery of Lake Ngami, 1849, Aug. 1, and his crossing the continent of s. Africa, from the Zambesi (or Leeambye) to the Congo, and thence to Loando, cap. of Angola, which occupied him about 18 months (1853, Jan.—1854, June). In 1854, Sep., he left Loando on his return across the continent, reached Linzanti (lat. 18° 17' s., long. 23° 50' e.), cap. of the great Makololo tribe, and thence proceeded along the banks of the Leeambye to Quilimane on the Indian Ocean, which he reached 1856, May 20. He then took ship for England. In 1857, L. published Missionary Travels and Researches in S. Africa, a work of great interest and value. Returning 1858 as British consul at Quilimane, he spent several years in further exploring the Zambesi, in ascending the Shiré, and discovering Lake Shirwa and Lake Nyassa the Maravi of the old maps. A narrative of these discoveries was published during his visit to England 1864-5. In the meantime, Lakes Tanganyika, Victoria Nyanza,

LIVINGSTONE—LIVINGSTONIA MISSION.

and Albert Nyanza, had been discovered by Burton Speke, and Baker, but the true source of the Nile wa still a problem. With a view to its solution, L., 1866, entered the interior, and nothing was heard of him for two years. The communications received from him afterward describe his discovery of the great water-system of Chambeze in the elevated region s. of Tanganyika. flows first w. and then turns n., forming a succession of lakes w. of the Tanganyika. To determine its course after it leaves these, whether it joins the Nile, or turns w. and forms the Congo, was the grand task which L. resolved to accomplish. He was baffled by inundations. the hostility of the slave-dealers, and by the want of supplies, which were habitually delayed and plundered by those who conveyed them. When nothing certain had been heard of him for some time, Henry M. Stanley, sent by the New York Herald, with abundant supplies for Dr. L., boldly pushed his way from Zanzibar to Ujiji, where 1871 he found the traveller in great destitution. On parting with Stanley, L.—who did not purpose to remain in Africa more than a year longerstarted on a fresh exploration of the river-system of the Chambeze or Lualaba, convinced that it would prove to be the head-waters of the Nile; but overcome by hardships and by sickness resulting from the climate, he died at Ilala, beyond Lake Bemba. His body was brought home 1874, Apr., and interred in Westminster Abbey. Dr. L. regarded himself as a pioneer missionary whose work was to open the country for Christianity, commerce, and civilization. When he began his explorations vast regions of the map of Africa were a blank. He greatly enlarged geographical knowledge, depicted the manners and life of the unknown African peoples, and roused the indignation of the world against the Arab slave-trade.—See Africa. Dr. L.'s Last Journals were preserved and published 1874; his Personal Life, by William G. Blaikie, was issued 1880.

LIV'INGSTONE RIVER (in Africa): see Congo.

LIVINGSTONIA MISSION: a Christian enterprise in Africa, whose chief settlement is at Cape Maclear at the s. end of Lake Nyassa (q.v.). It was based on a suggestion made by Dr. Livingstone that this lake was the best position for the establishment of a mission with a view to the annihilation of the Portuguese and Arab slavetrade in e. Africa. An expedition, costing about \$30,000, was equipped 1875 by the Scotch Presb. churches, for establishing a mission here. Another station called Blantyre has been planted in the Shiré Highlands, within easy distance of the lake. As yet the chief industries are iron manufacture, basket-making, and cloth manufacture from the bark of trees and cotton. With the exception of the 70 m. of the Murchison Falls, there is unbroken water communication between the head of Nyassa and the Indian Ocean.

LIVIUS, līv'ī-ŭs, Titus (known as Livy, līv'ī): most illustrious of Roman historians: b. at Patavium (Padua), B.C. 61, according to Cato, but according to Varro B.C. 59, the year of the great Cæsar's first consulship. know nothing of his early life, except that he practiced as a rhetorician, and wrote on rhetoric. There is internal evidence which makes it probable that he did not commence his great history till he was near middle age. He lived to see his 80th year; and having been born under the republic, died under Tiberius. His fame was so thoroughly established and widely spread, even during his lifetime, that a Spaniard travelled from Gades to Rome only to see him. Quintilian, in claiming for the Romans equal merit in the department of history with the Greeks, compares L. to Herodotus, and there is no doubt that his countrymen regarded him as their greatest historical writer. The story that Asinius Pollio pretended to discover a certain provincialism or Patavinity in his style, is probably false; but even if it be true, modern criticism is unable to discover in what the peculiarity consisted; for L.'s work is one of the greatest masterpieces of Latin, or of human composition. Originally, the Roman history of L. was comprised in 142 books, divided into tens or decades; but only 30 books, with the greater part of five more, are extant. of a complete narrative from the foundation of the city to the historian's own time, we have detailed portions, the most valuable of which are the first decade, containing the early history, and the third containing the wars with Hannibal. Among the surviving fragments of what is lost, is a character of Cicero, preserved in the Suasoria of Scneca, the execution of which makes us deeply regret that time has not spared L.'s account of the transactions of his own period.

In classing L. in his proper place among the great historians of the ancient and modern world, we must not think of him as a critical or antiquarian writer—a writer of scrupulously calm judgment and diligent research. He is pre-eminently a man of beautiful genius, with an unrivalled talent for narration, who takes up the history of his country in the spirit of an artist, and makes a free use of the materials lying handiest, for the creation of a work full of grace, color, harmony, and a dignified ease. Prof. Ramsay has remarked, that he treats the old tribunes as if they were on a level with the demagogues of the worst period; and Niebuhr censures the errors of the same kind into which his Pompeian and aristocratic prepossessions betrayed him. But this tendency, if it was ever harmful, is harmless now, and was closely connected with that love of ancient Roman institutions and ancient Roman times which at once inspired his genius, and was a part of it. And the value of his history is incalculable, even in the mutilated state in which we have it, as a picture of what the great Roman traditions were to the Romans in their most cultivated period.

LIVIUS ANDRONICUS-LIVONIAN.

literary talent most conspicuous in L. is that of a narrator, and the English reader perhaps derives the best idea—though it is but a faint one—of his quality, from the histories of Goldsmith, or the Tales of a Grandfather of Sir Walter Scott. He does not rival Tacitus in portraiture or in tragic power, but no writer has ever surpassed him in the art of telling a story; and the speeches which, according to the antique fashion, he puts into the mouths of his historic characters, are singularly ingenious, pointed, and dramatically real. There is also something in a high degree winning and engaging about what we may call the moral atmosphere of L.'s history, which nobody can read without feeling that the historian had a kindly tender disposition—a large, candid, and generous soul. The editio princeps of L., which did not contain all that we now have of the work, was published at Rome about 1469, and Mss. of parts of L. were existing in that century which have since disappeared. most celebrated editions are those of Gronovius, Crevier, Drakenborch, and Ruddiman; and, in recent times, esteemed recensions of the text have been issued by Madvig, Alschefski, and Weissenborn.

LIVIUS ANDRONICUS, līv'i-ŭs ăn-drō-nī'kŭs: father of Roman dramatic and epic poetry: by birth a Greek, native probably of Tarentum, whose period was about the middle of B.C. 3d c. He translated the Odyssey into Latin Saturnian verse, and wrote tragedies, comedies, and hymns after Greek models. Mere fragments are extant, of which a collection is in Bothe's Poetæ scenici Latini (V. Halberst 1823); and Düntzer's Livii Andronici Fragmenta Collecta et Illustrata (Berlin 1835).

LIVNY, *līv'nē*: ancient district town of Great Russia, govt. of Orel, lat. 52° 25′ n., long. 37° 37′ e. There is extensive trade in corn, cattle, and honey. Pop. (1880) 12,980.

LIVONIA, li-vō'ni-a (Ger. Lievland): one of the three Baltic provinces of Russia, to which belong also the islands of Oesel, Man, and Runo; 18,088 sq. m. The country is mostly flat, one-fourth of it covered with wood. The soil is of moderate fertility; nevertheless agriculture, and cattle and sheep breeding, are brought to high perfection. L. has many extensive factories and distilleries belonging to the govt., also cloth manufactories, one of which, near Pernau, is very extensive. The inhabitants of the country are of Finnish and Lettish descent; those in the towns are chiefly Germans, with a sprinkling of Russians, Poles, and Jews. L., till the 17th c., included the three Baltic provinces of Courland, Livonia, and Esthonia. Pop. (1892) 1,270,159; (1897) 1,300,640.

LIVONIAN, n. li-vō'ni-ăn: a Finnic language in the n. e. of Livonia, one of the three Baltic provinces of Russia.

LIVORNO-LIZARD.

LIVORNO, $l\bar{e}$ - $v\check{o}r'n\bar{o}$, or Leg'horn: province of Italy, in the division of Tuscany, on the w. coast. The island of Elba (q.v.) belongs to this province. Fruit and the vine are largely cultivated. The chief city is Leghorn (q.v.), whose Italian name is Livorno. Pop. (1901) 123,877.

LIVRAISON, n. līv'rā-zōng' [F. livraison, delivery of goods—from livrer, to deliver—from mid. L. liberātīō-nem, delivery]: a part of a book which is published in successive portions or numbers; a commercial term for a partial transfer of goods.

LIVRE, n. levre [F. livre—from L. libra, a pound]: name of an ancient French coin, derived from the Roman Libra or As (q.v.). There were livres of different values, the most important being the Livre Tournois (of Tours), which was considered the standard; and the Livre Parisis (of Paris), which was equal to 5ths of a livre Tournois. In 1795, the livre was superseded by the franc (80 francs=81 livres Tournois: see Franc).—Livre was also the ancient French unit of weight, and was equal to 17.267 oz. avoirdupois: the Kilogramme (q.v.; see also Gram) has taken its place.

LIV'Y: see Livius, Titus.

LIXIVIAL, a. līks-īv'ī-āl [L. lixīvīŭs, made into lyefrom lix, lye]: containing the salt extracted from woodashes; resembling lye. Lixiv'iate, v. -ĭ-āt, to dissolve out or extract the saline matter from wood-ashes; to form lye: Add. making a lixivium. Lixiv'iating, imp. Lixiv'iated, pp.: Add. reduced to lixivium. Lixiv'-Ia'tion, n. -ā'shŭn, operation or process of extracting alkaline salts from ashes by pouring water on them, the water imbibing the salts: process of washing or steeping certain substances in a fluid, for the purpose of dissolving a portion of their ingredients, and so separating them from the insoluble residue, Lixiv'ium, n. -ĭ-ŭm, the water which has been impregnated with alkaline salts from wood-ashes.

LIXURI, *lĭks-ô'rē*: town of the island of Cephalonia, on the w. shore of the Gulf of Argostoli. It is a Greek bishop's see. Pop. 7,000.

LIZARD, n. liz'erd [F. lézard; It. lucerta—from L. lacerta, a lizard]: popular name for such animals of the reptile kind, as the chameleon, iguana, etc., which have tails and legs, and are covered with scales. More strictly (Lacerta), genus of saurian reptiles, type of a numerous group, in which Monitors (q.v.), etc., are included, and to which the Megalosaurus and other large fossil saurians are referred. The name L. is indeed often extended to all the saurian reptiles; but in its more restricted sense it is applied only to a family, Lacertidæ, none of which attain large size, while most of them are small, active, brilliantly colored, and bright-eyed creatures, loving warmth and sunshine, abounding chiefly in the warmer parts of the old world. They have a long, extensile,

LIZARD-LLANELLY.

forked tongue; the body is generally long, and terminates in a rather long tail; the feet have each five toes, furnished with claws; the upper parts are covered with small imbricated scales; the scales of the under parts are larger; a collar of broad scales surrounds the neck; the bones of the skull advance over the temples and orbits; the back part of the palate is armed with two rows of They feed chiefly on insects. The SAND L. (L. agilis or L. stirpium) is about seven inches long, variable in color and marking, but generally sandy-brown on the upper parts, blotched with darker brown, and having a lateral series of black, rounded spots, each of which has a yellowish-white dot or line in the centre. The Com-MON L., or VIVIPAROUS L. (Zootoca vivipara), is smaller, more slender, very variable in color, a dark-brown generally prevailing on the upper parts. Both arc harmless creatures, as are all the others of this family. Larger species are found in s. Europe. Some of the lizards are quite susceptible of being tamed. They are remarkable for the readiness with which the end of the tail breaks off; the flinging of a glove or handkerchief on one when it is trying to make its escape, is often chough to cause the separation of this portion, which lies wriggling, while the animal hastens away. The lost portion is afterward reproduced. Lizards in cold countries become torpid in winter.

LIZ'ARD, in Heraldry: denoting either—1. The reptile usually so-called; or, 2. A beast somewhat resembling the wild-cat, and said to be found in several countries of n. Europe, represented with brown fur, and large spots of a darker shade.

LIZARD POINT, *lĭz'erd poynt*: a cape in Cornwall, so called from having been a place of retirement for *lazars*, or persons afflicted with leprosy: see Cornwall.

LLAMA, n. lâ'mă: a priest; Buddha: see LAMA.

LLAMA, or Lama, n. $l\hat{a}'m\check{a}$ [Peruvian]: animal of the camel kind, more lightly built, and without a hump, peculiar to S. America: see Lama.

LLANDAFF, lăn-dăf' [Welsh, Llan Taff, place of a church on the Taff]: city of S. Wales, county of Glamorgan, on the right bank of the Taff, 3 m. above Cardiff, in a district remarkable for beauty. It is the seat of a bishopric, the revenue of which is £4,200. Pop. about 700.

LLANDUDNO, lăn-dăd'nō: or lăn-dăd'nō: very fashionable watering-place in the county of Caernarvon, N. Wales, situated between the Great and Little Orme's Heads, 40 m. w.s. w of Liverpool. The air is described as 'delicious,' and there is every facility for sea-bathing, and extensive healthy rambles. Pop. (1871) 2,762; (1881) 4.838; (1891) 7,333.

LLANELLY, lä-něl'li, W. thlâ-něth'lē: borough, manufacturing town, and seaport of S. Wales, county of Caermarthen, 16 m. s.e. of the town of Caermarthen. The

LLANGOLLEN-LLERENA.

mineral wealth of the vicinity, and the easy access to the sea, have raised the town to commercial importance. The Cambrian copper-works employ a great number of the inhabitants; there are also silver, lead, iron, and tin-works, and a pottery. Coal is largely exported. In 1877, 2,935 vessels, of 207,251 tons, entered and cleared the port. Pop. of parliamentary borough (1871) 15,281: (1881) 19,655: (1891) 23,937.

LLANGOLLEN, län-göl'len, W. thlân-göth'len: small town of n. Wales, county of Denbigh, picturesquely situated on the right bank of the river Dee, 22 m. s.w. of Chester. It is visited by tourists on account of the beauty of the famous Vale of L., and for its antiquities, among which is the fragment of the round inscribed Pillar of Elisy. The 'Maids of Llangollen' were two English ladies, Lady Eleanor Butler and the Honorable Caroline Ponsonby, who near the end of the last century retired to spend their lives together in this little village. Lady Butler died 1829 aged 90; Miss Ponsonby, in 1831, aged 76. They gave their time to charity, though sometimes entertaining friends.—Pop. of L. (1891) 3,225.

LLANIDLOES, lä-nid'los, W. thlâ-nid'los: municipal borough of N. Wales, county of Montgomery, 19 m. w.s.w. of the town of Montgomery. Its church is one of the most beautiful in Wales. Considerable manufactures of flannel and other woolen fabrics are carried on. Pop. 3,421.

LLA'NO ESTACA'DO: see STAKED PLAIN.

LLANOS, n. lâ'nōz [Sp.]: vast flat treeless plains, along the banks of the Orinoco, in the n. portion of S. America, covered partly with tall luxuriant grass, partly with drifting sand, and stocked with innumerable herds of cattle. They resemble the more southern Pampas (q.v.), and the N. American Savannahs (q.v.). The inhabitants, a vigorous race of shepherds, are called Llaneros.

LLANQUIHUE, lyân-kē'wā: district of Chili, bounded n. by Valdivia, e. by the Andes Mts., s. by a strait separating it from the n. end of Chiloe and by the Gulf of Ancud, w. by the Pacific; 8,350 sq.m. It is mostly a plain drained by the river Maullin, and covered by forests and many picturesque lakes, of which the largest is Lake Llanquihue. The climate is mild and healthful; the soil is fertile, resembling that of the n. coast of Europe. All the European vegetables are raised, and large quantities of potatoes, wheat, and other grain. Coal is found in the s. part, and easily taken to the coast over the good roads. The province has over 50 free public schools. The cap. and principal town is Puerto Montt, on the Gulf of Ancud.—Pop. of dist(1891) 72,400.

LLERENA, *lyā-rā'nā*: town in the Spanish province of Badajoz, 63 m. s.e. of Badajoz. The inhabitants are mostly employed in agriculture. Near L., Lord Combermere with his cavalry routed, 1812, Apr. 11, a French force of 2,500 cavalry and 10,000 infantry.—Pop. 6,000

LLORENTE-LLOYD'S.

LLORENTE, lyō-rĕn'tā, Juan Antonio: 1756, Mar. 30 —1823, Feb. 5; b. Rincon del Soto, near Calaborra, Spain: historian of the Inquisition. He was educated by his maternal uncle, and received priest's orders 1779. He took his degree in canon law, and was named successively advocate of the Council of Castile 1781, vicargen. of Calahorra 1782, and finally sec. of the Inquisition 1789. L. was early attached to the liberal party. On the fall of Jovellanos, he was deprived of his employments, and remained in disgrace fill 1805, when he recovered favor as the reward of a literary service of questionable character which he rendered to Godoy, by a historical essay against the liberties of the Basque provinces. On the intrusion of the Napoleon dynasty, L. became a zealous partisan of the French, and an active instrument of the French policy, to which he lent all his support at the press, as well as in office; and being obliged to flee, on the restoration of Ferdinand, he fixed his residence in Paris, where he published the work to which his celebrity is due—Critical History of the Inqui-This work, which professes to be founded on authentic documents, though throwing much light on a subject previously inaccessible, has, in the judgment of impartial historians, as Prescott, Ranke, and others, lost most of its value by its plainly partisan character, and by the exaggerations in which it abounds. See In-QUISITION. Written by L. in Spanish, it was translated into French, under the author's eye, by Alexis Pellier (Par. 1817,18), and has been translated into most of the European languages. L. published, during his residence in Paris, several other works, some, it is alleged, of questionable morality. His work, Portraits Politiques des Papes, led to his being compelled to quit Paris 1822, and a few days after he reached Madrid he died. Most of his works were published in Spanish and in French. LLOYD'S, n. loydz [from Lloyd's Coffee-house, Lon-

don, where rooms were set apart for the same purpose]: set of rooms on the first floor of the Royal Exchange, London, frequented by merchants, ship-owners, underwriters, etc., for obtaining shipping intelligence, and transacting marine insurances. One large room, with small rooms attached, is set apart for the use of the underwriters, and there two enormous ledgers lie constantly open, one containing a list of vessels arrived, the other recording disasters at sea. In the same series of rooms there is a self-registering anemometer and anemoscope for the use of the underwriters; also a valuable collection of charts for consultation. See Insurance, Marine. extent of business transacted here is indicated by the value annually insured—more than £40,000,000. None but members of L. who have duly paid the fees, are allowed to transact business there either as insurance-brokers or underwriters. The shipping intelligence is furnished by agents appointed for the purpose, and there is scarcely a port of consequence where one is not stationed.

agent receives no salary, his labor being ably compensated by the advantages that he derives from the connection. The intelligence contained in the ledgers is also diffused over the country every afternoon by the publication of Lloyd's List. There are two other rooms—the Reading Room, merely an extensive news-room; and the Captain's Room, where auctions of ships are carried on, and where captains and merchants can meet in a sociable manner. The society of L. is managed by a committee of 12, selected from the members, who also appoint the agents and officials of the establishment. The expenses are defrayed by fees and annual subscriptions.

Lloyd's Register of British and Foreign Shipping is a volume published annually, and containing information respecting vessels, their age, materials, repairs, owners, captains, etc. This information is supplied by salaried agents at the different ports. The office of the Register is quite distinct from L. of the Exchange. 'Classed at Lloyd's,' is said of a ship whose character and seaworthiness are shown by its being entered in a certain class on Lloyd's Register—the highest class being registered as A1 (see A1). See Martin's History of Lloyd's (1876).

LLOYD'S, Austrian: association for general, commercial, and industrial purposes, founded in Trieste by Baron Bruck 1833, to supply the want experienced by the maritime insurance companies of that port, of a central administration to attend to their common interests. This association, like its London prototype, has agents in all principal foreign ports, whose duty it is to collect all information of a nature to affect the commerce and navigation of Trieste, and to keep a list of all entrances and clearances of ships at their respective ports. This information is published in the Giornale del Lloyd Austriaco. This company has established regular communication between Trieste and all the important seaports in the Adriatic and Levant, by means of a large fleet of steamers, which also carry the Austrian mails. The society of A. L. includes three sections: the first is composed of insurance companies, the second of steamboat companies, while the third or scientific department (established 1849), has a printing press, an engraving-room, and an artistic establishment for the perfecting of engraving on copper and steel. This last section has issued a great number of literary and scientific journals.

LLOYD'S BONDS: obligations by companies under their seal, purporting to be for work done, or for materials supplied for the purposes of an undertaking, and covenanting to pay the debt and interest thereon. They were devised by an eminent English counsel, whose name they bear, to enable railway companies to exceed and powers of borrowing money granted to them by parliament. The issue of these bonds was abused, being frequently made without the shareholders, or the statutory debenture holders of the company, being consulted; and the Railway Companies' Securities Act, 1866;

LLUMAYOR-LOAD.

and the Railway Companies' Act 1867, made requisite provision against abuses. L. B. cannot be granted for money lent; and they are valid and enforceable only when granted in bonâ fide to contractors and others, for work actually done, or materials supplied.

LLUMAYOR, lô-mī-ōr', or Lluch-mayor, lyôch-mī-ōr': town of the island of Majorca, among mountains, 15 m. s.e. from Palma. Pop. 7,000.

LO, int. lō [AS. la]: look; behold.

LOACH, or Loche, n. loch [F. loche; Sp. loja, a loach], (Cobitis): genus of fishes of the carp family (Cyprinide), having an elongated body, covered with small scales, and invested with a thick mucous secretion; a small head, a small toothless mouth surrounded with 4-10 barbules; small gill-openings, and three branchiostegal They are found only in Europe and Asia. species, the Common L. (C. barbatula), called in Scotland the Beardie, is common in rivers and brooks in Britain. It seldom exceeds four inches in length; is yellowishwhite, clouded, and spotted with brown; feeds on worms and aquatic insects; and is highly esteemed for the table. It generally keeps very close to the bottom of the water.—The Lake L. (C. fossilis) of the continent of Europe, is sometimes 12 inches long, with longitudinal stripes of brown and yellow. It inhabits the mud of stagnant waters, coming to the surface only in stormy The flesh is soft and has a muddy flavor.

LOAD, n. lōd [AS. hlad, a load; hladan, to load: Icel. hladi, a heap; hlada, a bain: comp. Gael. lòd, a load, a burden: see LADE 3]: a burden; a cargo; that which is borne with inconvenience, difficulty, or pain; weight; pressure; a weight, or defined quantities of different commodities or bulky merchandise: V. to burden; to lay on or in for conveyance; to make heavy by something added; to charge, as a gun; to bestow or confer abundantly. Load'ing, imp, burdening; charging, as a gun: N. a burden; a cargo. Load'ed, pp., or Laden, pp. lā'dn: Add. charged with a load or cargo; burdened or oppressed, as with a load. Load'er, n. -èr, one who, or that which.—Syn. of 'load, n.': freight; lading;

amount; quantity; encumbrance.

Note 1.—'When we view an object already provided with a load, so as to fix our attention on its present condition rather than the process by which that condition was brought about, the object is laden; when we look at the process of laying on a load, rather than its effect of leaving another object laden, the participle is loaded.'—Latham. We say 'a loaded gun,' but 'a laden ship,' and 'laden with death,' 'laden with sorrow.'

Note 2.—Lot, in the expressions, 'what a lot of money,' 'what a lot of people,' in the sense of 'quantity or bulk,' is probably a corruption of Load. There may be an etymological connection between Load and Lot, as there is in sense, as in 'heavy is my lot'—see Dr. C. Mackay.

LOADSTONE-LOAN.

LOADSTONE, n. lōd'stōn [AS. lád; Icel. leid, a way, a journey, and Eng. stone; Icel. leidarstein, a stone of the way or of conduct, a loadstone,] called also Magnetic Iron Ore: the magnet; mineral consisting of a mixture of peroxide of iron and protoxide of iron; occurring sometimes in grains, as Iron Sand, in trap rocks, sometimes in beds in primitive rocks, as in Scandinavia, where it is a valuable ore of iron. It is remarkable for its highly magnetic quality; indeed magnetism was known first as belonging to it. It is of black color; and occurs in concretions, and crystallized in octahedrons and rhomboidal dodecahedrons. Load'star, n. -stâr [Icel. leidarstiarna, a star of conduct]: the pole-star; the leading or guiding star.—Note. These words are properly spelled Lodestone, Lodestar.

LOAF, n. löf [AS. hlaf; Goth. hlaibs; Ger. laib; Icel. hleifr; Fin. laipe, bread, loaf]: a mass or lump of baked bread; a conical mass of refined sugar. Loaves, n. plu. lövz. Loaves and fishes, material interests or worldly advancement sought under the high pretense of patriotic fervor or spiritual zeal.

LOAF. v. lof [Ger. laufen, to go to and fro, to haunt: Sp. gallofear, to saunter about and live upon alms: Gael. lobh, to rot: formerly an Americanism]: to saunter about idly and lazily; to lounge about streets and corners instead of working honestly. Loafing, imp.: Adj. wandering idly about; lounging lazily about the streets and public houses. Loafed, pp. loft. Loafer, n. [Gael. lobhar, a leper, a rotten scoundrel]: an idel olunger; a vagrant; a lazy vagabond.

LOAM, n. lom [AS. lam; Dut. leem; Ger. leim, clay: L. limus, mud, clay: comp. Gael. lom, bare]: soil consisting of a mixture of clay, sand, and lime, with animal and vegetable matters in intimate mixture. The clay varies from 20 to 50 per cent.; the proportion of lime is generally not more than five per cent. Loamy soils are among the best and most fertile: they are not stiff and tenacious like clay soils, and they are much more fertile than sandy soils. Even in mere mechanical properties, they are superior to both. The 'clay' used for bricks is often really a loam in which the proportion of true clay is large. In Italy, France, and some other countries, walls are made of L. beaten down between planks placed at the requisite width. These walls become very solid, and last for centuries. Loamy, a. lom'i, consisting of loam; partaking of the nature of loam, or like it.

LOAN, n. lōn [Gael. lon, a meadow, a pasture]: in Scot., a meadow; a lane; a quiet, shady, winding path: also Loaning, n. lōn'ing.

LOAN, n. lon [Icel. lan; Dan. laan, anything lent: Sw. lana, to lend: O.H.G. lehan, a thing granted: Ger. leihen, to lend]: anything given for temporary use; sum of money lent for a time at interest; grant of the use: V. to grant the use of for a time; to lend. Loan'ing, imp.

Loaned, pp. lond. Loan-monger, a dealer in loans: a money-lender. Loan-office, a place where small sums of money are lent at high interest to be repaid by instalments; a pawnbroking office.—A Loan of money is an implied contract, by which B, the borrower, agrees to repay L, the lender. There are various modes by which B gives an acknowledgment for a loan, as by giving a bond or a promissory-note, or I. O. U. (q.v.). But no writing is necessary to constitute the contract, which may be proved by parole, and often is proved by the lender's oath, confirmed by circumstantial evidence or letters of the borrower. The debt must in general be sued for in six years in the United States, and in England and Ireland. In Scotland, a borrower is much more favored by various legal provisions.—See Borrowing, in Law: Bailment.

LOAN ASSOCIATIONS, BUILDING: see BENEFIT BUILDING SOCIETIES: COÖPERATION.

LOANDA, ST. PAUL DE: see SÃO PAULO DE LOANDA.

LOANGO, lō-ăng'gō: most powerful of the small African states, on the coast, a little n. of the mouth of the Congo. The coast district is thinly wooded; inland the surface rises, but the interior is little known. Palm-oil, gum, wax, orchil, copper, and ivory are exported; cotton, coffee, bananas are abundantly raised, tillage being carefully attended to. The dense population are of small size, but skilled in many industries, especially as weavers of bast and straw. The king is a tool of the fetish ministers; the religious observances are peculiarly rigorous, superstitious, and oppressive. Loango, the chief town, is near the coast, 130 m. n. of the Congo.

LOASACEÆ, lō-a-zā'sē-ē: natural order of calycifloral exogens, natives of America, chiefly of its temperate and warmer parts. There are about 70 known species, herbaceous plants, hispid with stinging hairs. They have opposite or alternate leaves, without stipules. The calyx is 4–5-parted; the petals 5, or, by an additional inner row, 10. The stamens are numerous, in several rows, sometimes in bundles. The ovary is inferior, 1-celled; the fruit capsular or succulent. The genus Loasa sometimes receives the popular name of Chili Nettle.

LOATHE, v. loth [AS. lath, hateful, evil: Icel. leidr, loathed, disliked: Ger. leid, what is offensive to the feelings: F. laid, ugly]: to regard with mingled hatred and disgust; to feel disgust at, as at food or drink. Loath, a. loth, literally, filled with aversion—hence, unwilling; backward; reluctant. Loathing, imp. loth-ing: N. disgust; nausea; aversion. Loathed, pp. lothd. Loather, n. -èr, one who feels disgust. Loath-ful, a. -fûl, disgusting; exciting abhorrence. Loath-ingly, ad. -li. Loath-some, a. loth-sim, disgusting; hateful. Loath-somely, ad. -li. Loath-someness, n. -nès, the quality of exciting disgust or abhorrence.—Syn. of 'loathe': to abhor; abominate; detest; hate; nauseate.

LOAVES-LOBELIA.

LOAVES, n. lovz: the plu. of Loaf, which see.

LOB, v. löb [Icel. lubbaz, to loiter about; lubbi, a shaggy dog with hanging ears: Dut. loboor, a dog or pig with hanging ears: W. llabi, a long lubber]: in OE., to hang down slack, dangling, or drooping; to let fall in a slovenly or lazy manner; to droop: N. a heavy, clumsy, or sluggish person; a clown; a clumsy, heavy worm: see Lobworm. Lob'bing, imp. Lobbed, pp. löbd. To lob along, to walk lazily, as one fatigued.

LOBATE: see under Lobe.

LÖBAU, *lö'bow*: town of Saxony, 40 m. e. of Dresden. Near it are mineral springs and bathing-establishments. In its ancient *Rathhaus*, the deputies of the six towns of Lusatia met 1310–1814.—'L. diamonds' are crystals found here.—Pop. (1880) 7,400; (1890) 8,378.

LOBAU ISLAND, lō'bow: in the Danube river, 6 m. below Vienna. It was captured by Napoleon I. 1809, May 19, occupied by the French Army three days afterward, made the rendezvous of the invading forces after the battle of Aspern, and was the scene of the celebrated passage of the Danube in July following. Georges Mouton, French gen. of division (1770, Fcb, 21—1838, Nov. 21, b. Phalsbourg) was one of the most distinguished heroes of this campaign, and for his conspicuous services in the battle of Aspern was created by the emperor Count of Lobau. Subsequently he became a member of the chamber of deputics, assumed command of the national guard in the revolution 1830, was made a peer and marshal 1831, and suppressed the insurrections 1832 and 34.

LOBBY, n. lŏb'bĭ [Ger. laube, an arbor—from laub, foliage: mid. L. lobĭä, an open portico]: ante-chamber or gallery; a hall or passage serving as a common entrance to different apartments. The lorby, in reference to legislative bodies; popular term for the group of men and women, able, or claiming to be able, to influence legislators for or against certain measures that may be presented for vote. Members of 'the lobby' are paid in some way for their exertions; and while, doubtless, their object and methods may in some instances be entirely correct, the system usually has little use for moral scruples and has ready affinity with corruption.

LOBE, n. $l\bar{o}b$ [F. lobe, a lobe—from Gr. lobos, the tip of the ear: It. lobo—lit., the part hanging down]: a part or division of the lungs, liver, etc.; the lower soft part of the ear; in bot., a large division of a lcaf, or of a seed—often applied to the divisions of the anther. Lobed, a. $l\bar{o}bd$, or Lobate, a. $l\bar{o}'b\bar{a}t$, having lobes or divisions. Lobule, n. $l\bar{o}b'\bar{u}l$, a little lobe, or the subdivision of a lobe. Lobular, a. $-\bar{u}-l\dot{e}r$, belonging to or affecting a lobe.

LOBELIA, n. lō-bē'lĭ-ă [from Matthias Lobel, or de i'Obel (1538-1616, b. Lille, France), botanist of Ling

LOBIPEDIDÆ-LOBLOLLY.

James I.]: extensive genus of beautiful plants, corollifloral exogens of nat. ord. Lobeliaceæ. This order is nearly allied to Campanulacea, one of the most conspicuous differences being the irregular corolla. It contains almost 400 known species, natives of tropical and temperate climates, abounding chiefly in damp woods in America and n. India. They are generally herbaceous or half-shrubby, and have a milky juice, often very acrid, and often containing much caoutchouc. ous character belongs to the order, and some are excessively acrid, as Tupa Fuillei, a Chilian and Peruvian plant, of which the very smell excites vomiting; yet the succulent fruit of one species, Centropogon Surinamesis, is eatable.—The WATER L. (L. Dortmanna) is frequent in lakes with gravelly bottom, often forming a green carpet underneath the water with its densely matted sub-cylindrical leaves. The flowers are blue, the flowering stems rising above the water.—To this genus belong many favorite garden-flowers, e.g., the beautiful Cardi-NAL FLOWERS (L. cardinalis, L. fulgens, and L. splendens) and the Blue Cardinal (L. syphilitica), natives of warmer parts of N. America, perennials, which it is usual to protect during winter in Britain. To this genus belongs also the Indian Tobacco of N. America (L. inflata), an annual, with an erect stem, 12 inches high or more, with blue flowers, which has been used as a medicine from time immemorial by the aborigines of N. America; both the flowering-herb and seeds are exported. It is the former, compressed in oblong cakes, which is chiefly employed. A volatile liquid alkaloid, Lobelina (lō-bĕ-lĭ'nă), and a peculiar acid, Lobelic acid (lō-bē'lĭk) have been obtained from it.

In small doses, L. acts as diaphoretic and expectorant; in full doses, as a powerful nauseating emetic; while in excessive doses, or in full doses, too often repeated, it is a powerful acro-narcotic poison. It is the favorite remedy of a special class of empirics; consequently deaths occur from its administration. Physi-

vians seldom prescribe it now, except in asthma.

LOBIPEDIDÆ, lōb-ĭ-pĕd'ĭ-dē: family of birds of ord. Grallæ, nearly allied to Rallidæ (Rails, Craiks, Gallinules, etc.), but differing in having the toes separately margined on both sides with a scalloped membrane, thus forming an interesting connecting link with the web-footed birds, or ord. Palmipedes. The general appearance of many of the L. also approaches to that of the Anatidæ. Coots and phalaropes are examples of this family. They are all aquatic, some of them frequenting fresh, and others salt water; some often found far out at sea on banks of sea-weed.

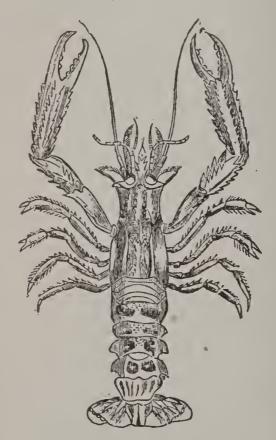
LOBLOLLY, n. löb'löl-lǐ [OE. lob, something not having strength to support itself, V. to hang down, and Eng. loll]: among seamen, gruel or spoon-meat: see Lob. Loblolly Boy, sailor's name for the man who assists the medical officers in the 'sick bay' or hospital.

LOBLOLLY-LOBSTER.

LOB'LOLLY BAY: see GORDONIA.

LOBOS ISLANDS, *lō'bōs*: two small groups of rocky islands, about 12 m. off the coast of Peru, noted for their immense supply of guano. Seals abound on their shores.

LOBSTER, n. löb'ster [AS. lopustre; L. locusta, a lobster], (Homarus): genus of Crustaceans, of ord. Decapoda, sub-ord. Macrura (see Crayfish); differing from Crayfish (Astacus), to which, in general form and characters, they are very similar, in having the rostrum in front of the carapace not depressed, but straight, and armed with many teeth on each side, and the last ring of the thorax not movable, but soldered to the preceding one. The Common L. of Europe (H. vulgaris), found in great plenty on rocky coasts of Britain, and most parts of Europe. sometimes attains such size as to weigh 12 or 14 lbs., when loaded with spawn, though a lobster of a pound



Norway Lobster (Nephrops norvegicus).

weight, or even less, is deemed fit for the market. It is highly esteemed for the table, and is in best season from Oct. to the beginning of May. Its clouded and varied bluish-black color changes to a nearly uniform red in boiling. It is found in greatest abundance in clear water of no great depth, and is very active in retreating from danger, using its powerful tail-fin for swimming, or almost springing through the water, and thrusting itself into holes of the rocks which seem almost too small to admit its body. The claws are powerful weapons of defense; one is always larger than the other, and the pincers of one claw are knobbed on the inner edge, those

LOBULAR-LOCAL.

of the other are serrated. It is more dangerous to be seized by the serrated than by the knobbed claw. Lobsters are sometimes caught by the hand, which requires dexterity; but they are more frequently taken in traps of various kinds, sometimes made of osier twigs, sometimes a kind of nets, sometimes pots, but always baited with animal garbage. The supply of lobsters in the British market has of late years greatly fallen off from over-fishing. Lobsters are very voracious; they are also very pugnacious, and have frequent combats among themselves, in which limbs are often lost; but the loss is soon repaired by the growth of a new limb, rather smaller than the former one. Like crabs, they frequently change their shelly covering, and, for a short time before their moulting, are very languid and inert. growth takes place during the time when the shell is soft, and with extraordinary rapidity.—The American L. (H. americanus) is similar, but has claws much larger in proportion.—The Norway L. (Nephrops norvegicus) is frequently taken on the British coast, and appears in the murkets. The eyes are kidney-shaped, and not round, as in the common lobster. The claws have also a more slender and prismatic form, and the color is a pale flesh It is said by some to be the most delicate of all the crustaceans: by others, to be inferior to the common lobster.—The Spiny L., or Sea Crayfish (Palinurus vulgaris), is common on the rocky coasts of Britain, particularly in the south: it is believed to be the Karabos of the Greeks, and the Locusta of the Romans. tains a length of about 18 inches. The shell is very hard, and the whole body is rough with short spines. antennæ are very long. There are no claws or pincers, the first pair of feet being very similar to the others. Spiny L. is brought to market, but is inferior to the common lobster.—Other species are found in other parts of the world. For anatomy, etc., see Huxley, The Crayfish (1880)

LOBULAR, LOBULE: see under Lobe.

LOBWORM, n. löb'werm: a worm, a species of dorsibranchiate annelid, of the genus Arenicola, ord. Errantia; having a large head with neither eyes nor jaws. It is found in sandy sea-beaches, and is used as bait—named from its shaggy, heavy appearance, and broad lobe of the one end: also Lugworm: see Lobe and Lob.

LOCAL, a. lō'kăl [F. local—from L. locālis, pertaining to a place—from locus, a place: It. locale, local]: pertaining to or limited to a particular spot or place. Locally, ad. -lǐ, with respect to place. Locality, n. lō-kăl'ĭ-tĭ, existence in a place; limitation to a certain district; situation. Locale, n lō-kâl' [F. fem. locale, local]: particular place or spot where anything is done or happens. Localize, v. lō'kăl-īz, to make local; to limit to a particular place. Localizing, imp. Lo' calized, pp. -izd. Localization, n. lō'kăl-ī-zā'shūn, the act of fixing or limiting to a particular place,

LOCAL GOVERNMENT.

LO'CAL GOVERNMENT IN THE UNITED KINGDOM: control and administration of the local affairs of separate divisions and districts of Great Britain and Ireland, by subordinate authorities. It is thus contrasted with imperial government, or the control and administration of affairs for the whole country, by the supreme legislative and executive authority.—See Local Government Board.

Prior to the Reform Act 1832, L. G. in the United Kingdom was very rudimentary. The management of local affairs was almost entirely in the hands of the propertied and privileged classes; the mass of the people had little or no participation in it. As regards the counties and rural districts, the justices of the peace in England, the commissioners of supply and justices in Scotland, and the grand jury and justices in Ireland, were the exclusive governing authorities; while burghal affairs were practically in the hands of close corporations, either self-elected or chosen by privileged classes of burgesses. The first step toward local self-government was the reform of the municipal corporations 1832 -35, whereby the town councils were made elective. Since then legislation has been progressive in this Thus, in setting the government of urban communities—such as the local board districts of England, and the police burghs of Scotland—the legislature has given them as full control of their affairs as the reformed municipal boroughs. So the establishment of the poor-law systems for each of the three kingdoms 1835–45, and the creation of poor-law unions in England and Ireland, first introduced activity into the rural governmental districts. The remaining great area for local administration, the county, has not yet obtained a system of representative government; but the establishment of county boards will probably take place at no distant date.

The following are the present areas and organizations of L. G. in each of the three kingdoms:

of L. G. in each of the three kingdoms:

ENGLAND.—There are five main areas or units of L. G: (1) the parish; (2) the union; (3) the borough; (4)

the local board district; (5) the county.

(1) The Parish.—The parish area is such as is defined for poor-law purposes in the Poor-Law Amendment Act. 1866, and thus frequently differs from both the ancient civil and modern ecclesiastical parish. There are about 15,400 parishes in this sense, varying greatly in size, and having an average population of about 1,500. The boundaries frequently intersect those of boroughs and local board districts, and sometimes extend into more counties than one. The parish authority is composed of a vestry, either common or select, and overseers. Common vestries are meetings of all the rated inhabitants, with cumulative voting up to six votes according to rating. Select vestries are statutory bodies elected in parishes of not less than 800 rated householders, and

LOCAL GOVERNMENT.

holding office three years. Overseers are annually appointed, one or more, by the county justices, though the vestry may also elect a paid assistant overseer. With the exception of roads, which in many parishes are managed by parochial surveyors; and elementary education, which, in nearly all rural parishes, is administered by parochial school-boards, few matters have been parochially administered, the parish being chiefly an area for collection of rates and parliamentary registration. For a great reconstruction (1894), see Parish Council.

(2) The Union.—Unions were established in England under the Poor-Law Amendment Act, 1834, and consist of groups of parishes arranged on certain principles of convenience for poor-law management. The union authority is the board of guardians, which consists partly of the justices resident in the union, partly of guardians elected by the respective parishes. The L. G. Board fixes the number of guardians to be elected by each parish, also the qualification (not, however, to exceed £40 rating) for the office. The electors are the owners and ratepayers, and the voting is cumulative up to six

- (3) The Borough.—There are 229 boroughs governed under the Municipal Corporation Acts of 1835 and 69. In population, they range from over 500,000 to less than 3,000. Their boundaries frequently intersect parishes, and in some cases counties. Usually they are divided into wards. They are governed by corporations, composed of a mayor, aldermen, and a town council. town council is elected by the citizens who are ratepayers in possession of a house within the borough, and who reside within seven miles of it. The number of councilors varies from 12 to 48. The election takes place annually by ballot, and the councilors choose the aldermen (not necessarily from their own number), and the mayor, who must be either an alderman or councilor. A property or rating qualification (not exceeding £30 rating) is necessary for the office of councilor or alderman. The mayor holds office for one year, aldermen for six, councilors for three years. The council appoint a town-clerk and treasurer. A police magistrate may be appointed by a sec. of state on the application of the council.
- (4) Local Board Districts. Besides municipal boroughs there are certain urban or semi-urban communities, organized for purposes of L. G. These are of three kinds, viz.: (a) 'Local Government Districts,' regulated by the Public Health Act, 1875; (b) 'Improvement Act Districts,' regulated by special local acts; and (c) 'Lighting and Watching Act Districts.' The most important of these classes is the first, of which there are about 640 in England and Wales, varying much in size and population. A few of them are also municipal boroughs. Their boundaries frequently cut those of other areas. The governing authority is an incorporated local board, the

LOCAL GOVERNMENT.

members of which are elected and hold office three years, one-third of them retiring annually. A property or rating qualification (varying in amount according as the pop. is less than or reaches 20,000), and residence within seven miles, are necessary for election. The vot-

ing is cumulative.

(5) The County.—There are 52 counties in the ordinary sense, in England and Wales, besides several so-called 'liberties,' and 18 boroughs called 'counties of cities,' or 'counties of towns,' which are treated as counties for a number of purposes. Each county proper is divided for purposes of administration into petty sessional districts, the areas of which are fixed by quarter sessions. county authrities consist of a lord lieutenant, who represents the crown for military purposes; a custos rotulorum (keeper of the county records), usually the same person as the lord lieut.; a sheriff, selected annually by the crown, as its representative in the execution of the law; justices of the peace, qualified by the possession of or being rated for property of a certain amount (the justices are appointed by a commission of the peace on the recommendation of the lord lieut.; they hold courts of petty and quarter sessions, and are the chief administrators of county affairs); and a coroner or coroners, whose duties are now of little importance, except so far as they hold inquiries in cases of sudden or suspicious death. They are in most cases elected by the freeholders of the

Scotland: (1) the parish; (2) the burgh; (3) the county.

(1) The Parish.—The parish is the unit area for poorlaw administration in all districts, and for public health and education administration in all or nearly all rural districts. The union as an area of local government does not exist in Scotland. There are 887 civil parishes, differing widely in extent and population. Besides the civil parish proper, there are also a few so-called quoad sacra parishes, erected for ecclesiastical purposes, and which have been adopted, where they exist, as the modern educational parish. The local authority in the parish is the parochial board, except for education, which is managed by the school board. The constitution of the parochial board varies in rural and burghal parishes. In rural parishes it consists of a representation of the kirk-session, in number from one to six; of all owners of lands and houses in the parish of the annual value of £20; of persons elected by such ratepayers as are not themselves members, the precise number being fixed by the board of supervision (the central authority for the control of poor-law and sanitary matters); and, when the parish contains part of a royal burgh, of the provost and bailies thereof, not exceeding five. burghal parishes the board consists of four persons nominated by the kirk-sessions in the burgh; four persons nominated by the magistrates; and so many persons

LOCAL GOVERNMENT.

elected by the ratepayers, the precise number, not exceeding 30, being fixed by the board of supervision.

(2) The Burgh.—There are three classes of burghs which require to be distinguished, viz.: (a) royal and parliamentary burghs; (b) burghs of regality and barony; and (c) police burghs. (a) The first class is the most important, having had full municipal government given them since the time of William IV. They correspond to the English municipal boroughs. They are governed by corporations composed of magistrates and burgesses, acting in a town council, and representing the citizens. The councilors are elected by the votes (by ballot) of burgesses who possess the qualifications requisite for the parliamentary franchise, under the Reform Acts 1832 and 68; and the council choose the magistrates by open voting. The magistrates consist of a chief magistrate, called provost, bailies, and a treasurer. One-third of the council go out of office annually, except the provost and treasurer, who hold office three years. The magistrates and councilors elect a town-clerk, and other necessary officers. (b) Burghs of regality and barony are of little importance as areas of local government. Their boundaries are fixed by the act or charter under which they have been erected, and they are governed by magistrates and council, or by magistrates alone, elected in an anomalous manner. (c) Police burghs correspond to local board districts in England. The local authority is the police eommissioners, an elected body, with most of the powers of a corporation, in number 6 to 12. The commissioners choose magistrates, one senior, called chief-magistrate, and two junior. The qualifications of the electors and the commissioners are prescribed by the

statute under which they are incorporated.

(3) The County.—There are 33 counties, properly so called, in Scotland, and one 'county of a city,' Edin-The county of Kirkcudbright is called a stewartry. They vary greatly in extent and population. They are divided into districts for various purposes e.g., districts for special or petty sessions. The organization of the county proper comprises the following officials: A lord lieutenant, who is appointed by commission from the erown, and represents the crown for military purposes.—A sheriff-principal, a salaried, though not usually a resident official, with duties partly judicial and partly administrative, and who is responsible for the peace of the county.—A sheriff-substitute, resident and salaried official, whose duties are both administrative and judicial: an appeal lies from him in most judicial cases to the sheriff-principal.—Procurators-fiscal, who, to a certain extent, fulfil the duties of the eoroner in England. They are salaried officials, appointed by the For some of the larger counties there are two or more sheriff-substitutes and proeurators-fiscal appointed, who aet in separate districts.—Justices of the peace, not salaried, appointed by commission on the recommendation of the lord-lieutenant; their functions are not so extensive as in England and Ireland.—Commissioners of supply, an incorporated body, and the chief rating authority in the county. Every proprietor of landed property in the county of the yearly value of £100 is entitled to be put on the list. The chairman of the commissioners is called the convener of the county.—County road trustees, the only body in the county organization which has an element of popular representation; established 1878. It is composed of the commissioners of supply, representatives of burghs in the county which have not the control of their own roads, and representatives of ratepayers in the separate parishes, elected triennially. There are other minor officers.

IRELAND.—There are three main areas of L. G.: (1)

the union; (2) the town; (3) the county.

(1) The Union.—The parish is not an area of L. G. in freland. In 1838, for purposes of poor-law administration the unions were created, and this area has since been utilized for many other purposes of local administration. There are 163 poor-law unions in Ireland, varying greatly in size and population. Each union is divided into a number of districts: the total number of such districts is 3,438. The governing authority is the board of guardians, one half of elected members, and the other of justices of the peace. The number and qualification of elected guardians in each union and division is fixed by the L. G. Board. A property qualification is requisite, and in the average of cases this

amounts to about £20 annual value.

(2) The Town.—There are three classes of towns: (a) corporate towns regulated by the Municipal Reform Act, 1840; (b) towns regulated by the Improvement Act, 1854; (c) towns regulated by the Lighting and Cleansing Act. 1828. The corporate towns are administered by a council consisting of aldermen and councilors elected for three years. Besides being a burgess, certain qualineations in respect of ownership or possession of property in the town are required for membership of the council. The governing authorities in towns under the Acts of 1854 and 28 are composed of commissioners, whose numbers are determined under the former act by the L. G. Board and under the latter by the ratepayers. The number varies between 9 and 21. Certain qualifications dependent on occupancy or ownership of property are required for the office of commissioners.

(3) The County.—There are 32 counties proper in Ireland and eight 'counties of cities' and 'counties of towns.' The county is divided into baronies made up of so-called townlands. Both the counties and the baronies vary much in size and population, some baronies being larger than the smaller counties. The principal local authorities (apara from the lord next, high-sheriff, justices of the peace and counter, whose positions are much

LOCAL GOVERNMENT.

the same as in England) are the grand jury and the presentment sessions. The grand jury is the principal rating and administrative authority. It consists of persons, 23 in number, appointed by the high-sheriff, who is himself annually nominated for each county by the The high-sheriff must select from each barony a £50 freeholder, or £100 leaseholder; and he then completes the required number by selection at his discretion from the freeholders and leaseholders of the county. Presentment sessions are sessions for the county dealing with the expenditure of the county cess or rate. are also baronial sessions dealing with the expenditure for the barony. Every justice of the peace for the county may vote at both sessions. For the county sessions each barony may elect a cesspayer to act as a representative member. For the baronial sessions the grand jury fixes, in an anomalous manner, the number of representative cesspayers who may act.—Besides the union, town, and county administration, there are certain minor local government organizations in Ireland, e.g., lunatic asylum districts, harbor districts, arterial drainage districts, and inland navigation districts (see the several titles above named: e.g., Parish: Shire: MUNICIPALITY: BUROUGH; VESTRY: OVERSEERS: GUAR-DIAN: SHERIFF: CORONER: PROCURATOR-FISCAL: TOWN-Council: etc.).

Reform of Local Government.—Reform of L. G. in the United Kingdom ought to be directed to simplification of areas and consolidation of authorities. A unit area is required, of which there may be a regular and proportionate combination or division. At present, areas intersect and overlap each other in an amazingly complicated manner. Thus, to take one well-known instance of a local board district in England (Mossley in Lancashire), it comprises parts of four poor-law parishes, of two unions, and of three counties. There is great difficulty, no doubt, in establishing a unit area. Much may be said in favor of each of the main areas—parish, union, county—for this purpose. Despite the inequalities of size, probably the county will be found the most suitable unit, as there are certain associations of sentiment attaching to it, which it would be scarcely possible to part with. Proportionate subdivisions of it should then be made, without regard to existing parish or union areas. So far as regards the boroughs and large towns, their areas ought not to be intersected by those of the rural districts, as civic and rural communities The consolidation of have interests altogether distinct. local boards will save much of the present unnecessary expense and waste in administration: and by increasing the power and influence of such boards, will induce the best men in the different districts to take active interest in local affairs. There is no reason why a county board or a town council in buroughs should not-acting by departmental committees—take charge of education, poor-

LOCAL GOVERNMENT—LOCAL OPTION.

law, sanitary matters, and roads, and bridges. The first necessary reform, however, is the establishment of representative county boards, and legislation in this direc-

tion may be looked for at an early date.

For detailed information on the above matters, the following works may be consulted: Cobden Club Essays on Local Government and Taxation, edited by J. W. Probyn (London 1875); Local Government and Taxation in the United Kingdom, edited by J. W. Probyn (London 1882); Local Government in Scotland, by Goudy and Smith (Blackwood & Sons, Edinburgh 1880); Annual Abstracts of Local Taxation Returns; Mr. Goschen's Report on Local Taxation, 1870.

LO'CAL GOVERNMENT IN THE UNITED STATES: SCE STATE: COUNTY: CITY: TOWN: TOWNSHIP: WARD: MUNICIPALITY.

LO'CAL GOVERNMENT BOARD OF THE UNITED KINGDOM: department of the central government of Great Britain and Ireland, which supervises the administration of the laws relating to public health, the relief of the poor, and many of the innumerable functions which in the first instance fall to be performed by the various local authorities throughout the kingdom. chief of these local authorities, subordinate to this department, arc, in England, the Board of Guardians (superseding the old parochial system of government), the Quarter Sessions in counties, and the town councils or other institutions in burghs. In Scotland, the parish is still the unit of area for poor-law purposes. In Ireland, the principal local institution is the Grand Jury of the county. Over the action of these the L. G. B. watches by means of its inspectors. If the local body fails to perform its duty, the central authority may initiate action—as by ordering the removal of nuisances; or it may make good the faulty proceedings of the inferior insti-tution. At its creation the L. G. B. superseded the Poor-Law Board; it assumed the functions of the scc. of state under the Registration Acts, the Sanitary Acts, the Local Taxation Returns Act: and undertook the dutics of the privy council under the Prevention of Diseases and Vaccination Acts.

It has a pres. appointed by the sovereign, and has as ex officio members, the lord pres. of the council, all the principal secretaries of state, the lord privy seal and the chancellor of the exchequer. All the work, however, is done by the pres. and his staff of secretaries and clerks. The pres. and one sec. are eligible to parliament, and the pres. has sometimes sat in the cabinet.

See LOCAL GOVERNMENT.

LO'CAL OP'TION, as to Sale of Liquor: term denoting the power which temperance reformers have of late sought to secure for the voters in any local community to regulate the liquor traffic within their bounds as to a certain majority of them shall seem best, either

LOCAL PREACHERS-LOCHABER-AX.

by maintaining unchanged, increasing, diminishing, or wholly prohibiting and suppressing the sale of intoxicating liquors. These powers might be exercised periodically, either through general suffrage, or through a poard of representatives elected for the purpose. mode of dealing with the liquor traffic accords with the principles of 'home government,' establishes restriction only in communities which are sufficiently interested in restrictive laws to see to their enforcement, and allows such communities to proceed with such measures of reform as they may see applicable under their circumstances without awaiting the slower movement of some large area like a state. L. O. for counties also is widely advocated. Some reformers however protest that L. O. is liable to be inefficient for good; as adjoining towns or counties may fail to restrict the traffic and may furnish supplies which will nullify the restriction where adopted.

LO'CAL PREACH'ERS: in the Methodist Church system an order of lay-preachers. They are distinct from the regular ministers in charge of churches, who are itinerants; and they are not appointed by the bish-A local preacher is first recommended from the church to which he belongs; then, after examination in doctrine and discipline, elected by a quarterly conference; then licensed (for one year only) by the pres. of the conference; his license requires annual renewal. After four consecutive years of approved service, he may, on examination by an annual conference, be or-A local preacher, when licensed, is subject to the direction of the pastor or presiding elder in whose charge he resides.—Wesley instituted the office; and it has been found highly serviceable in utilizing the gifts of laymen, who support themselves by their secular business during the week, and preach on the Lord's Day—often in new or weak churches, and usually without pay. Their number in all the Methodist bodies in the United States is probably nearly 25,000.

LOCAR'NO: see LAGO MAGGIORE.

LOCATE, v. $l\bar{o}'k\bar{a}t$ [L. $loc\bar{a}tus$, set or disposed—from locus, a place]: to set in a particular place or position; in U.S., to select or survey for settlement. Lo'CATING imp. Lo'CATED, pp. Location, n. $l\bar{o}-k\bar{a}'sh\bar{u}n$, situation with respect to place; that which is located; state of being placed; a colonial name for surveyed land; a settlement. Locative, a. $l\bar{o}k'\bar{a}-t\bar{u}v$, in gram., applied to the case expressive of locality, or at a place—existing originally in all the Aryan languages.

LOCH, n. löch [Gael. loch, an arm of the sea: Icel. lögr; W. llwch, a lake]: in Scot., a lake; a bay; an inlet or arm of the sea. Note.—The ch in Scotch is guttural.

LOCHABER-AX, n. löch-âb'er-aks [from Lochaber, a district of Scotland]: formidable battle-axe (q.v.), formerly used by the Highlanders of Scotland, consisting

of a short pole, usually curved, with a sharp broad blade like an ax at one end. Note.—The Scotch pronunciation of ch is gutteral.

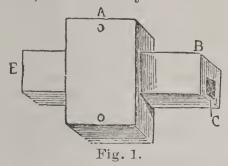
LOCHES, *lōsh*: a picturesque town of France, dept. of Indre-et-Loire, on the Indre, 25 m. s.e. of Tours. The castle of L. (now a ruin) acquired a fearful reputation for horrible deeds of cruelty during the reign of Louis XI.—Pop. 4,000.

LOCHIA, n. $l\bar{o}$ - $k\bar{i}'\bar{a}$ [Gr. locheia, child-birth]: in mcd., the discharge that flows from the uterus and vagina after child-birth while the mucous membrane is returning to its former condition. Lochial, a. $l\bar{o}'k\bar{i}$ - $\bar{a}l$, pertaining to or connected with the lochia.

LOCK, n. lok [Icel. loka, a bolt; lok, a cover, a shutter, a latch: Goth. lukan; Dut. loken, to shut, to close: AS. loc, a place shut in]: apparatus for fastening doors, etc., by means of a key (see below): the part of a gun or rifle by which it is discharged (see below): the part of a canal confined by gates (see below): any narrow confined place or inclosure; a grapple in wrestling: V. to fasten with a lock; to shut up or confine; to close fast; to embrace closely; to become fast. Lock'ing, LOCKED, pp. lökt: ADJ. made fast; furnished with a lock; closely embraced. Lockage, n. lok'āj, the materials for locks; the whole system of locks on a canal; a toll paid for passing through. Lockfast, -fast, made close and secure by a lock. Lock-JAW, or Locked-JAW, n. lökt-, rigidity or stiffness of the lower jaw, which adheres so firmly to the upper that it cannot be separated (see Tetanus). Lock-smith, one who constructs locks or repairs them. Lock-up, a temporary prison. Lock-up houses, houses of bailiffs of the sheriff (in Britain) to which debtors arrested for debt were taken first until it was seen whether they would settle their debt without being taken to the ordinary jail. See Execution: IMPRISONMENT. DEAD-LOCK, a complication or counteraction of things producing an entire stoppage. Lock-HOSPITAL, lök-hös'pi-tăl [Dut. loken; Icel. lûka, to shut, to fasten: AS. loc, a place shut in: F. loquet, the latch of a door]: a hospital inclosed or separated from other buildings; an institution for the treatment of venereal diseases. Lock-out, the condition of things when a master refuses further employment to his men until the settlement of a trade dispute—locking the doors of his works against their entrance.

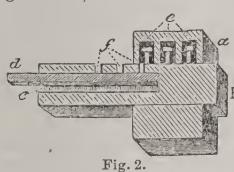
LOCK, n. lök [Dut. locke, a lock or flock of wool: Icel. lokkr; Dan. lok, a lock of hair]: a tuft of hair; a small bunch or tuft of wool; ringlets or straggling tufts of hair around the forehead.

LOCK: contrivance for securely fastening the door of a building, the lid of a box, etc. Among the early Egyptians, Greeks, and Romans, locks were used, but their construction evinced little skill, and they were usually made of hard-wood; in fact, they were little more than wooden bolts, requiring only the hand to unfasten them. The first improvement was a remarkable one, invented by the ancient Egyptians; it contained the



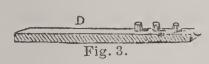
principles of the modern tumbler-lock: but though still in use among the Egyptians and Turks, it has never, in their hands, made any advance. The L. consists of a case, fig. 1, A, which is nailed to the door; through the case passes a large wooden bolt, fig. 1, B, the end of which.

E, enters the staple, while the opposite end is left exposed. In the lower part of the bolt B, is a square groove C, which has certain round or square holes, as



seen in fig 2, f, which gives the open view of the lock. When the bolt is pushed home into the staple, these holes come exactly under corresponding little cavities in the case e, fig. 2, in each of which is placed an upright wooden pin, with a knob, which prevents its

falling too low; these little pins consequently fall into the holes in the bolt when it is pushed far enough, and the door is locked. In order to unlock it, the bar of



wood, fig. 3 is passed into the groove C, in the bolt, and on the bar there are the same number of pins of wood placed up-

right as there are holes in the bolt, and loose pins in the chambers of the case; and these upright pins are placed so as to correspond exactly in size and position to the holes; therefore, when the pins reach the holes, they slip into them, and push up the loose pins into their respective cavities, and the bolt is then easily pulled back by means of the bar or key. This is simple and ingenious, but it is very clumsy, and, as usually made in Turkey, is not secure. Nevertheless, it has been in use longer than any other form of lock in existence.

During the middle ages, very complicated and ingenious locks of various kinds were made, and as much artistic taste was expended upon the ornamentation of their external metal-work as there was skill in the interior mechanism. Such locks, however, were not adapted to general use, and were found only on the caskets of the wealthy. The ordinary ward and spring

rocks were the only ones commonly employed till the beginning of the present century, even for important purposes, and this kind of L. is still in very common use. It consists of a bolt of metal, to which a spring is attached, and it is moved forward or backward by means of a key, which, by raising the bolt, compresses the spring in the slot, through which it works, and so lets it pass on till out of the range of the key's action, which, turning on a pivot, is regulated by the length of its wards, and the depth of a curve cut in the under side of the bolt. In order to prevent any key of the same size opening all such locks, little ridges of iron are placed in circles or parts of circles, and wards are cut in the keys, so as to correspond with them; hence, only the key which has openings or wards which will allow the ridges to pass through them, can be used. In fig. 4, A is the bolt,

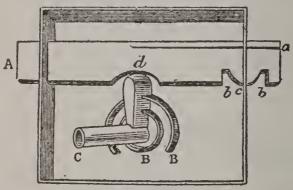


Fig. 4.

having at the end opposite to that which enters the staple a small piece slit, bent outward, and tempered hard; this forms the spring a; below, are two notches b, b, divided by a curved piece of the bolt c; there is another notch d, which, if the key enters, and is turned round, it draws the bolt forward or backward in locking or unlocking, and the spring makes the end of the bolt either drop into one of the notches b, b, or rise up the curve c, according to the distance to which it is pulled. The ridges B, B, are so placed as to allow the wards of the key, C, to move freely, and to prevent the entrance

of another key with different wards.

The tumbler-lock is the type of another class, and is an advance upon the last; the two principles are, however, in most cases combined. In fig. 5 a L. nearly like the former has been chosen, and the simplest form of tum-It will be seen that the bolt, A, has neither bler added. the spring-piece nor the notches and curves on the under side, as in fig. 4; but it has two notches on the upper side, which are exactly as far apart as the distance moved by the bolt in locking or unlocking. Behind the bolt, partly seen only—the covered parts being indicated by dotted lines—is the tumbler B, a small plate moving on the pivot d, and having projecting from from its face a small square pin e, which, when the bolt is locked or unlocked, falls exactly into one or the other of the small notches f, f. There is in the key a notch g, which cor-

LOCK.

responds to the outline of the tumbler, as indicated by the dotted lines. This acts upon the tumbler when the

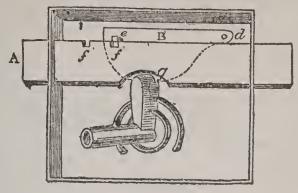


Fig. 5.

key is turned, and raises it so as to lift the pin out of the notch in the bolt, and allow the latter to be moved freely forward until the other notch comes under the pin, when the latter falls into and immediately stops its further progress, and the action of the key must be reversed in order to relieve it again. This very simple application of the tumbler is sufficient to explain the principle which may be, and is varied to an almost endless extent. Chubb's, among English locks, carries it out most fully, the bolt itself being only a series of tumblers, with a notch on the key for each. Bramah's L., patented 1788, has had immense reputation, chiefly for cabinets, desks, and other similar applications; it is very different in principle from those before mentioned. consisting of a number of movable slides or interior bolts working in an internal cylinder of the L, and regulated by the pressure upward or downward of the key acting on a spiral spring. For ordinary purposes, it is very secure; but when the utmost security is required, the beautiful L. invented by Cotterill of Birmingham, and the still more ingenious ones of Hobbs and Yale (both Americans), must be preferred. On safes to protect against burglary, the permutation and dial locks are now mostly used. These usually involve a series of wheels moving independently on one axis, yet capable of propagating movement one to another by a series of pins. The wheels, being dials varying in size and arranged one within another, show letters or figures, which can be arranged in a combination to produce a certain word, and until the combination is fixed for that word the key cannot possibly act in opening the lock. The chances against the combination being guessed by one who does not know it are practically infinite. For bank-vaults time-locks are in use, in which a clock-work may be set to liberate the bolt at a certain hour, before which time not even a knowledge of the proper combination will avail any one to open the lock. For further information on these ingenious and complicated pieces of mechanism, see Denison's Treatise on Locks, and The Rudimentary Treatise on the Construction of Lacks, by Charles Tow linson.

LOCK of a Gun: apparatus by which the powder is fired, or the piece discharged. Muskets, in their earliest use, were fired by the hand applying a slow match to the touch-hole. Toward the end of the 14th c., the first improvement appeared in the matchlock. This consisted



Matchlock.

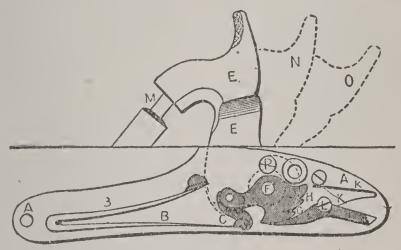
of a crooked iron lever, a, in the end of which the match was fixed. By a simple pin-gear pressure on the trigger, b, brought the match accurately down on the powderpan, of which the lid, c, had previously been thrown forward by the hand. This mode of firing involved the carrying of several yards of slow match, usually wound round the body and the piece; rain extinguished the match, and wind dispersed the powder in the pan, so that the matchlock, clumsy withal, was uncertain.

Superior to the matchlock was the wheel-lock, introduced at Nürnberg 1517, in which fire was produced by friction between a piece of flint or iron pyrites and a toothed wheel. The mechanism which generated the sparks simultaneously uncovered the pan, so that the dangers from wind and rain were averted; but before firing, the apparatus required to be wound-up like a clock, and therefore the discharges could not be frequent. The wheel-lock continued long in use in Germany, and partially in France. In the Spanish dominions, however, its place was supplied by the simpler contrivance called the Snaphaunce, Snapphahn, or Asnaphan lock, of nearly contemporaneous invention, which acting by means of a spring outside the lock-plate, produced fire through the concussion of a flint against the ribbed top of the powder-pan. Its positions of half and full cock were obtained by the insertion of a pin to stay the operation of the main-spring. In the middle of the 17th c., the flint-lock was invented, combining the action of the wheel-lock and the snaphaunce, while it was incontestably superior to citier. After combating much prejudice, it was, by the beginning of the 18th c., universally adopted in the armies of w. Europe. kets cinbracing it obtained the name of 'fusils' (French adaptation of the Italian focile, a flint). With successive improvements, the flint-lock continued in general use until the introduction of the percussion-lock almost in our own day; and among eastern and barbaric nations the flint-lock is still extant. Its great superiority over the snaphaunce consisted in the 'tumbler' (of which below) and the 'scear,' appliances still retained in the per-cussion-lock, which enabled the positions of half and

full cock to be procured without the intervention of

pins, always uncertain in their action.

The principle of the percussion-lock is the production of fire by the falling of a hammer upon detonating powder, the explosion of which penetrates to the charge in the barrel of the gun. The first practical application of this principle to fire-arms is due to the Rev. Mr. Forsyth of Belhelvie, Aberdeenshire, Scotland. Various forms in which to ignite the detonating powder have been devised, but that generally accepted until within the last few years was the copper cap, fitting tightly on the nipple of the gun, charged with a detonating compound, and exploded by the hammer falling upon it. The percussion-lock is shown in the annexed figure. A is the lock-plate; B, the main-spring, communicating



Percussion-lock.

through the swivel C, with the tumbler D, which concentrically with the hammer E, moves on the tumbler-nail F. In the figure, the hammer has delivered its stroke, and its further progress in the direction required by the spring B, is barred by the nipple M. On pulling back the hammer, E, to the position of half-cock N, the tumbler turns with it, and the pointed end of the scear I (which moves on the scear-nail L as centre), influenced by the scear spring K, falls into the notch G, in the tumbler. On forcing back the hammer to full-cock O, however, the scear will move down to the shallower notch H; and on the lever end of the scear being raised by the trigger, it brings down the hammer with a heavy blow on the cap. To keep the works firmly in their several places, a 'bridle' is screwed over them by the screws at L and P, and includes the pin, F, in its width.

Since the adoption of breech-loading arms, the action of the lock is so far varied that the hammer usually falls at M on a movable pin, which is impelled against a detonating charge placed in the body of the cartridge itself. A spiral spring around the pin brings it back to the position necessary for another blow. For the advantages of this arrangement and the mechanism of the lock in breech-loaders, see Breach-loading Arms,

LOCK, on a River or Canal: arrangement of two parallel floodgates, by which communication is secured between two reaches of different levels. The date of introduction of this contrivance is not known within a hundred years, nor is it clear whether it was employed. first in Holland or Italy. This however can be affirmed with certainty, that at the beginning of the 17th c., locks existed in both countries, and it is probable that they were arrived at gradually by successive improvements in the mode of rendering shallow rivers navigable. viously, the first step would have been to dam the stream across at intervals, leaving gates in the dams for the passage of vessels. This measure would have divided the river into reaches or steps, each, as the source was approached, being higher above the sea than the one last passed. But the passage up or down—and especially up—such a stream must be extremely slow, as at each dam a vessel must wait until the gate has been opened, and the level equalized in the reach it is in, and that on which it is proposed to enter. Where the reaches were far apart, a large body of water would require to be raised or lowered, and the process would be tedious. mediæval engineers next tried to place the dams as near together as possible, but expense limited this. course then was to build two dams, with floodgates, just far enough apart to allow a vessel to float within. Under this arrangement, only the section between the dams had to be raised or lowered. The cost of thus doubly damming a wide river, however, was very great, and it was an easy transition in thought to remove the passage from the main stream altogether, and construct a lock with double gates, which should open at one end above. and at the other below the dam or weir. The economy of money in building, and of time and water in working,

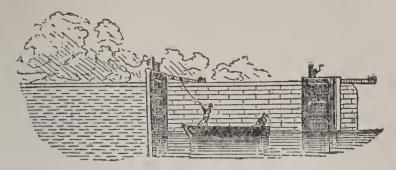


Canal-lock-seen from above.

was obvious; and on this principle all locks are now made, wherever there is traffic of any importance. The arrangement consists of two pairs of gates, opening up the stream, and offering, when shut, a salient angle to the stream or upper pressure. The effect is that the weight above only tends to close the gates still tighter. When a vessel is to be brought from one level to the other, it is floated into the 'pound,' as the space between the upper and lower gates is called. The gates are then shut, and a sluice in the lower part of the upper gate raises the surface of the pound, or the sluice in the lower

LOCK-LOCKE.

gate depresses it, in a few minutes to the level of the



Vertical Section of a Thames Lock.

upper or lower reach, as the case may be. These sluices are worked by racks in the gates, and the ponderous gates themselves are moved with the aid of long and heavy levers. One pair of gates must always be shut, or the two reaches would speedily assimilate their levels. In the engraving, the boat has just entered from the

lower part of the river.

In canals where water is scarce, a reservoir, equal in size to the L. is formed at its side. When the pound is to be emptied, the water is run into the reservoir until it and the L. are at the same level, which will be half height. The reservoir is then closed, and the remaining water in the L. runs off through the lower sluices in the usual way. On refilling the L. before opening the upper sluices, one quarter the quantity required can be obtained from the reservoir, thus effecting a saving of many tons of water at each filling.

On rivers, advantage is taken of islands for the formation of Weirs (q.v.) and locks. On the Thames, England, the locks are from two to three m. apart, and the river is locked by more than 50 locks from Teddington to Lechlade. On canals, to economize superintendence, the locks are usually constructed in 'ladders' of several close together, like a flight of steps. As the pressure on lock-gates is very great, and varies with the height of water above, the rise in one lock is rarely more than 8 or 9 ft. though in some instances 12 ft. have been accomplished, and in a very few cases even more.

LOCK, lok, or Gowpen, gowp'en, in Scotch Law: perquisite paid by custom to the miller's man for grinding corn: see Thirlage.

LOCKE, lök, DAVID Ross; popularly known by his signature, Petroleum V. Nasby: 1833, Sep. 20—1888, Feb. 15: b. Vestal, N. Y.: journalist. He received a He received a common-school education; learned the printer's trade in the office of the Cortland Democrat; travelled extensively through the west and south, and worked at his trade when he needed money: and 1852-61 was successively editor and publisher of the Plymouth Advertiser, Mansfield Herald, Bucyrus Journal, Bellefontaine Republican, and Findlay Jeffersonian, all in Ohio. While editing the latter paper, he published a satirical letter

over the signature of the Rev. Petroleum Vesuvius Nasby, dated 'Wingert's Corners, O., Mar. 21, 1861,' describing a meeting at which the Corners decided to secede from the state, and giving the reasons for the act. This letter was widely copied in the northern newspapers, and its popularity induced L. to undertake a series of letters, which he dated from 'Confederit X Roads,' and published till after the close of the civil war. Soon after starting the letters, L. became editor and proprietor of the Toledo Blade, and the future 'Nasby' letters appeared in that paper. After the war he published numerous political, social, and literary pamphlets, and became a popular lecturer. Beside his 'Nasby' letters his chief publications are: Divers Views, Opinions, and Prophecies of Yours Truly (Cincinnati 1865); Swingin' Round the Cirkle (Boston 1866); Ekkoes from Kentucky (1867); The Moral History of America's Life Struggle (1872); The Struggles of P. V. Nasby (1873); The Morals of Abou ben Adhem; or, Eastern Fruit in Western Dishes (1875); A Paper City (1878); Hannah Jane, poem, and Nasby in Exile (1882).

LOCKE, John: 1632, Aug. 29—1704, Oct. 28; b. Wrington, near Bristol, England. His father was steward to Col. Popham, and served under him as capt. in the Parliamentary army during the civil war. L. was sent to Westminster School, till 1651, when he was elected a student of Christ-Church, Oxford. There he went through the usual studies, but seemed to prefer Bacon and Descartes to Aristotle. His tendency was toward experimental philosophy, and he studied especially chemistry and meteorology. In 1664, he went to Berlin, as sec. to the British envoy, but soon returned to his studies at Oxford. In 1666, he made the acquaintance of Lord Ashley, afterward Earl of Shaftesbury, and on his invitation went to live at his house. In 1672, when Shaftesbury became lord chancellor, L. was appointed sec. of presentations, a post which he afterward exchanged for that of sec. to the Board of Trade. He was employed to draw up a constitution for the American province of Carolina, but his articles on religion were deemed too liberal, and the clergy procured insertion of a clause giving the favor of the state exclusively to the established church. In 1675 he took up his residence at Montpellier for the benefit of his health. He had all his life an asthmatic tendency, which at that time threatened to pass into consumption. At Montpellier, he formed the acquaintance of the Earl of Pembroke, to whom his Essay is dedicated. In 1679, he rejoined the Earl of Shaftesbury in England; but 1682 the earl fled to Holland, to avoid prosecution for high treason. L. bore him company, and so far shared with him the hostility of the government of James, as to have his name erased, by royal mandate, from the list of students of Christ-Church. Even in Holland, he was demanded of the States-general by the English envoy; but he con-

trived to conceal himself till the English court ceased to trouble itself on his account. In 1687, his Essay on the Understanding, begun 17 years before, was finished; and an abridgment of it was published in French (1688), by his friend Le Clerc, in his Bibliothèques, in which L. had published two years before his Method of a Commonplace Book. In 1689 appeared (also in Holland) his first letter on Toleration. But in 1688, the year of the Revolution, he came back to England in the fleet that conveyed the Princess of Orange. He soon obtained from the new government the situation of commissioner of appeals, worth £200 a year. He took lively interest in the cause of toleration, and in maintaining the principles of the Revolution. In 1690, his Essay on the Understanding was published, and met rapid and extensive celebrity; also a second letter on Toleration, and his well-known Treatises on Government. 1691, he was engaged on the momentous question of the restoration of the coinage, and published various tracts on the subject. In 1692, he brought out a third letter on Toleration, which, as well as the second, was a reply to the attacks made on the first. In 1693 was published his work on Education. In 1695, King William appointed him a commissioner of trade and plantations. In the same year he published his treatise on The Reasonableness of Christianity, written to promote William's favorite scheme of a comprehension of all the Christian sects in one national church. He maintained a controversy in defense of this book; he had another controversy in defense of the Essay on the Understanding, against Stillingfleet, Bp. of Worcester. His feeble health now compelled him to resign his office of commissioner of plantations, and to quit London; and he spent the remainder of his life at Oates, in Essex, at the seat of Sir Francis Masham. His last years were much occupied with the study of the Scriptures, on which he wrote several dissertations, which, with his little work, On the Conduct of the Understanding, were published after his death. L. was reared under strict Puritan influences, from which in early manhood he experienced a reaction from which in early manhood he experienced a reaction -not however from the Puritan morality, but from the narrowness and intenseness which were the natural characteristics of a reform which dealt with frightful abuses in an age when all classes of religionists deemed intolerance a duty. The Independents, who ruled Oxford when he was there as a student, did indeed—unlike the Presbyterian party—lead in promulgating the principles of true religious liberty. But the Independents in that time of storm developed a fanatical tendency which prepared a calm thinker like L. to feel the attraction of the liberal divines who were one of the parties in the Church of England.

Great as were L.'s services to his country, and to the cause of civil and religious liberty, his fame rests on the *Essay on the Understanding*, which marks an epoch in the

history of philosophy. His purpose was to inquire into the powers of the human understanding, with a view to find out what things it was fitted to grapple with, and where it must fail, so as to make the mind of man 'more cautious in meddling with things exceeding its comprehension, and disposed to stop when it is at the utmost extent of its tether.' This purpose led him to that thorough investigation of the constitution of the human mind, resulting in the most numerous and important contributions ever made by one man to the knowledge of this subject. He institutes a preliminary inquiry, in the subject of the First Book, as to the existence of innate ideas, theoretical and practical, on which the philosophical world has been so much divided: see Common SENSE. L. argues against the existence of these supposed innate conceptions, or intuitions, of the mind with a force and cogency that appear irresistible. Having thus repudiated (as has often been supposed) the instinctive sources of our knowledge or ideas, but rather (as should be said) the merely instinctive character of their substance as fully developed, he is bound to show how we gain knowledge or ideas in the course of our experience. Our experience being twofold, external and internal, we have two classes of ideas-those of Sensation, and those of Reflection. He has therefore to trace all the recognized conceptions of the mind to one or other of these so-called sources. Many of our notions are obviously derived from Experience, as colors, sounds, etc.; but some have been disputed, especially such as Space, Time, Infinity, Power, Substance, Cause, mere Good and Evil; and L. discusses these at length, by way of tracing them to the same origin. This is the subject of Book Second, entitled 'Of Ideas.' Later controversies, which F. could not have foreseen, have pressed his theory to such an extreme development that a materialistic system of the universe seemed to be involved. This has called forth a more searching criticism of L.'s position on this subject of the origin of our ideas, and has cast light on the unwarrantable identification of the developed substance of our ideas with the origin of the ideas. See IDEA. Book Third is on language considered as an instrument of truth, and contains much valuable material. The Fourth Book is on the nature, limits, and reality of our knowledge, including the nature of demonstrative truth, the existence of a God, the provinces of faith and reason, and the nature of error.

LOCKER, n. lök'er [Dut. loker, a case or cover—from loken, to shut: Sw. lock, a cover: see Lock 1]: a receptacle with a movable top, forming a seat; a shut receptacle along the side of a ship; a drawer or cupboard which may be closed by a lock; a custom-house officer of the water-side. Davy Jones's Locker, among sailors, a familiar nickname for the bottom of the sea. Not a shot in the locker, among sailors, a familiar phrase for being without money.

LOCKET-LOCK HAVEN.

LOCKET, n. lök'et [F. loquet, the latch of a door: dim. of Lock 2]: a little case, generally of gold or silver, attached to a necklace or guard, containing hair, a miniature, or other memento.

LOCKHART, lök'ert, John Gibson: 1794-1854, Nov. 25; b. Cambusnethan, Scotland; son of a minister of the Established Church of Scotland. L. studied at Glasgow, and then at Oxford, where, 1813, he took first-class In 1816, he became an advocate at the Scotch He appears, however, to have lacked the qualifications necessary for success in this profession; besides, the bent of his mind was toward literature. He and Wilson were long the chief supporters of Blackwood's Magazine, the organ of the Scotch tories. gan to exhibit that sharp and bitter wit that was his most salient characteristic, and made him the terror of his enemies. Upon the whig writers of the Edinburgh Review, L. poured a fire of wit and ridicule. This editorial connection led to his acquaintaince with Sir Walter Scott. In 1819, appeared Peter's Letters to his Kinsfolk. In 1820, he married Miss Scott, eldest daughter of Sir Walter. In 1821, he published Valerius, and 1822 Adam Blair. Both, especially the latter, show him to have possessed, at least, a thorough acquaintaince with the rules of art in fiction-writing. In 1823 appeared Reginald Dalton, a tale of English university life, and 1824 Ancient Spanish Ballads—perhaps the most popular of all his writings. In the same year he published his last novel, History of Matthew Wald. 1826-53, he edited the Quarterly Review. 1837-39, appeared Life of Scott, a work of undoubted merit, but which has given rise to much bitter controversy. In 1837, his wife died. viously his eldest son Hugh had died. His second son died at a later period. In 1843, L. was appointed auditor of the Duchy of Cornwall, with a salary of £600 a year. In 1847, his only remaining child, a daughter, sole surviving descendant of Sir Walter Scott, married J. R. Hope: she died 1858 leaving an only daughter, who inherited the estate of Abbotsford.

LOCK HA'VEN: city, cap. of Clinton co., Penn.: on the W. Branch of the Susquehanna river at the mouth of Bald Eagle creek, on the W. Branch canal, and on the Philadelphia and Erie and the Bald Eagle Valley divs. of the Pennsylvania railroad; midway between Philadelphia and Erie. It is the centre of a large lumber trade, has 9 saw and 4 planing mills, and ships about 35,000,000 ft. of lumber annually. Other industries are machine-shops, foundries, furnace, tanneries, and paper mill. It contains 14 churches, graded public schools, state normal school, Rom. Cath. acad., 1 national bank (cap. \$180,000), 1 state bank (cap. \$100,000), and daily and weekly papers. Pop. (1880) 5,845; (1890) 7,358; (1900) 7,210.

LOCKPORT-LOCOFOCO.

LOCKPORT, lök'port: city, cap. of Niagara co., N. Y., 55 m. w. of Rochester, and about 21 m. e. of Niagara Falls, at the intersection of the New York Central railroad and the Erie canal. It is named from the ten locks through which the canal is lowered 60 ft. from the level of Lake Erie to that of the Genesee river—the surplus water being conveyed through a canal three-quarters of a m. in length, giving immense water power which is distributed to extensive flour-mills, and to numerous factories, foundries, and machine shops. L. was made It is in a prosperous agricultural region, a city 1865. which contains also productive sandstone and limestone quarries. There are 17 churches; 7 public schools; 2 nat. banks (cap. \$300,000), 1 state, 1 private; Y.M. C. A. building; Rom. Cath. convent and acad.; and Holly water-works and steam distributing systems. (1880) 13,522; (1890) 16,038; (1900) 16,581.

LOCKRAM, n. lök'răm [OF. locrenan—from the town Loc-Renan in Bretagne]: formerly the name for a coarse unbleached linen.

LOCKYER, lök'yer, Joseph Norman, f.r.s.: astronomer: b. Rugby, England, 1836, May 17. He received a private-school and continental education; became a clerk in the war office 1857; studied mathematics and astronomy; was elected fellow of the Royal Astronomical Soc. 1860; appointed editor of Army Regulations 1865; began telescopic observations of the sun, and applied an original method for observing the red flames without an eclipse 1868; and was elected a fellow of the Royal Soc. In 1870 he was appointed sec. of the royal commission on scientific instruction and chief of the English govt. eclipse expedition to Sicily; 1871 was chief of the eclipse expedition to India, and became Rede lecturer to the Univ. of Cambridge; and 1874 was Bakerian lecturer to the Royal Soc. and was voted its Rumford medal. Besides contributions to Nature, he has published Elementary Lessons in Astronomy and Contributions to Solar Physics (1873); The Spectroscope and its Applications (1873); Primer of Astronomy (1874); Studies in Spectrum Analysis (1878); and Star-Gazing, Past and Present (1878).

LOCLE, *lōk'l:* frontier town of Switzerland, canton of Neuchâtel, 10 m. n.w. of the town of Neuchâtel. The people are engaged chiefly in watch-making. More than 80,000 watches are annually manufactured. Pop. (1888) 11,312.

LOCO, $l\bar{o}'k\bar{o}$, in Music: indicates that the notes are to be played exactly as written.

LOCOFOCO, n. lō-kō-fō'kō [according to some etymologists from L. loco foci, instead of fire: other derivations are suggested]: formerly a familiar name for a member of the democratic party; applied especially to the radical portion of the democratic party, because at a meeting in Tammany Hall, New York, 1834, in which there was great

LOCOMOTION-LOCOPHONE.

diversity of sentiment, the chairman left his seat, and the lights were extinguished, with a view to dissolving the meeting; when those in favor of extreme measures produced loco-foco matches—then a comparatively recent invention, rekindled the lights, continued the meeting, and accomplished their object.

LOCOMOTION, n. lō'kō-mō'shŭn [F. locomotion—from L. loco, in a place; motionem, motion—from motus, moved]: the act or power of moving from place to place; progress from place to place. Lo'como'tive, n. -tīv, a steam-engine on a railway which draws the carriages and moves along with them (see Steam Car: Steam Engine). Adj. moving from place to place; not stationary. Lo'comotiv'ity, n. -ĭ-tĭ, power of changing place.

LOCOMO'TIVE, Compressed Air: engine for traction using compressed air instead of steam. Compressed air has been found serviceable for stationary engines for rock-drilling in tunnels, etc.; and it has been tried on short lines in a few streets in Glasgow, Paris, New York, and elsewhere. French engineers maintain that actual experiment shows that, thus far, the PNEUMATIC MOTOR (another name for Compressed Air Locomotive) is about three times as expensive as steam. The Glasgow experience is in the same direction. But Gen. Herman Haupt, American engineer, asserts that practice in Paris and experiments in New York show an economy of coal as compared with the direct application of steam, of four to one in favor of compressed air. Possibly the use of this power may have a future development as yet unknown.—See Heat, Latent Heat, Specific Heat: At-mospheric Engine: Pneumatic Dispatch: Caloric ENGINE.

LOCOMOTOR ATAXIA, lō'kō-mō'tŏr ă-tăk'sĭ-ă [L. locus, a place; mōtus, moved; and ataxia, which see under ATAXIC]: the want of co-ordination in the movements of the arms, legs, or both, depending upon fascicular sclerosis of the posterior column of the spinal cord.

LOCOPHONE, lō'kō-fōn: a name applied to a system of telegraphy from moving trains, under letters patent to L. J. Phelps. In it the familiar principle of the induction coil is utilized. An insulated wire is laid along the bed of the railroad between the tracks. A second wire is carried by a special car. This wire is formed into a long coil, whose layers or convolutions lie parallel to the axis of the car. The portion beneath the car is cased in gas pipe. If the ends of this wire are closed it is evident that any impulse of electricity sent through the wire between the tracks will send a corresponding impulse through the coil above it. The reverse also is true, so that in this simple arrangement is found the basis for telegraphing from a moving train. The telegraphing car carries a battery and Morse sounder and key in circuit with the coil. The track wire contains corresponding apparatus. It has been found to work

LOCULAMENT-LOCUS DELICTI.

well in practice, but has not been adopted to any great extent, on account of the practical difficulty in preventing confusion when many messages are received by the same wire. Its interests have been merged with those of other inventors Edison, Gillilland, etc., and a more perfect system has been the result of the combination: see Telegraphy, Train.

LOCULAMENT, n. $l\check{o}k'\bar{u}$ - $l\check{a}$ - $m\check{e}nt$, or Loculus, n. $l\check{o}k'$ - \bar{u} - $l\check{u}s$ [L. loculamen'tum, a case, a receptacle—from $loc\bar{u}$ - $l\check{u}s$, a small receptacle, a cell]: in bot., a cavity in the pericarp containing the seed; one of the cells of the anther. Locular, a. $l\check{o}k'\bar{u}$ - $l\dot{e}r$, relating to the seed-cell or compartment of an ovary. Loc'ulose, a. $-l\check{o}s$, or Loc'ulous, a. $-l\check{u}s$, divided internally into cells.

LOCULICIDAL, a. $l \breve{o} k' \bar{u} - l \breve{i} - s \bar{i}' d \breve{a} l$ [L. $loc \breve{u} l \breve{u} s$, a cell; $c \not e d \breve{e} r \breve{e}$, to cut]: in bot., applied to fruit dehiscing through the back of the carpels.

LOCUM TENENS, lō'kŭm tē'nĕnz [L. lŏcum, the place; tĕnens, holding]: one temporarily occupying the place of another, as that of a medical man or clergyman during absence or illness; a deputy or substitute.

LOCUS, n. lö'kŭs, Loci, n. plu. lō'sī [L. locus, a place]: in mod. geom., the curve described by a variable point; also the surface generated by a variable curve. notes the line or surface traversed by a point constrained to move in accordance with certain determinate conditions. Thus the L. of a point which must always preserve the same uniform distance from a fixed point, is the surface of a sphere; but if the motion be at the same time confined to a plane, the L. will be a circle: this is an illustration of the division into solid and plane loci which prevailed among the ancients. The Greek geometers made their geometrical analysis depend much upon the investigation of loci, but no specific records of their progress in this branch of geometry now exist. appears to have been their method was restored by Dr. Simson of Glasgow, whose work, De Locis Planis (1749), is a model of elegance. In modern geometry, plane loci are treated under the name of Curves (q.v.).

LOCUS DELICTI, $l\bar{o}'k\bar{u}s$ $d\bar{e}'-l\bar{\iota}k't\bar{\iota}$ [L. $l\bar{o}cus$, a place; delicti, of wrong doing]: in $criminal\ law$, place where a crime was committed. Locus standi, $l\bar{o}'k\bar{u}s$ $st\bar{u}n'd\bar{\iota}$ [L. standi, of standing]: the right to interfere or take a part; a recognized position. Locus pænitentiæ [L. place of repentance]: in $Scotch\ 'law$, time to withdraw from a bargain. The general rule is, that until the contract is finally settled, either party may retract; but if $rei\ interventus$ has intervened, i.e., if some act has been done by the other party on the faith of the agreement, and by which his position has been altered, the $locus\ pænitentiæ$ is barred. Much depends on the circumstances of each case as to the application of the rule. Locus in quo, $in\ kw\bar{o}$ [L. locus, the place; $in\ quo$, in which]: the place or spot in question; the place where the thing was done.

LOCUST, n. lō'kŭst [L. locusta, a lobster, a locust: Ît. locusta: F. locuste]: a migratory winged insect, very destructive to vegetation (see below): a name applied to several plants or trees (see below). Locusta, n. lō-kŭs'-tŭ, in bot., a spikelet of grasses formed of one or several flowers. Locust-beans, a name for the sweet pods of the carob-tree; the Ceratōniă siliquă: see Carob. Locust wood, the wood of a tree called the Robiniă pseudacāciă, ord. Leguminōsæ, extremely hard, strong, and durable, and in extensive use.

LOCUST (Acrydium; Locusta of some entomologists): insect; type of a family Acrydidæ (Locustidæ of some entomologists), of order Orthoptera, section Saltatoria (see GRYLLUS). The term L. is often used to designate various insects which through bearing marked resemblance to, are not properly classed with, the true See CICADA: GRASSHOPPER. The L. is larger than either the grasshopper or the cricket, and has shorter It has five eyes, three of which are on the top of the head. The wings are large and often show beauti-The thorax is large and the muscles of the ful colors. wings, like those of the legs, are very strong. The jaws are large and powerful, while the stomach and alimentary canal are adapted to a creature of the greatest vo-

racity.

With the exception of the Arctic regions, the L. is found in all parts of the world. It is most abundant and destructive in tropical countries, but often appears in vast swarms in portions of the temperate zones which have hot and comparatively dry summers. It has been known from a very early period. It is mentioned in the Bible as one of the plagues of Egypt, and from time immemorial has been a type of terrible devastation. and pestilence have often followed its invasions. The swarms come 'like a living deluge,' and every green thing disappears from the region which they traverse. In s. Asia and in portions of n. Africa they frequently appear in such vast numbers as to obscure the sun during their flight. The noise made by their marching and feeding is said to resemble that of a heavy rain falling on a distant forest. Invasions do not occur every year, but the intervals of freedom from them are of uncertain and unequal duration. In various regions of the old world the L. is substituted for the crops which it destroys, and is not only utilized as an article of food at home but is a regular market commodity for export.

The permanent home and natural breeding grounds of the L. are in dry and elevated regions. Here they multiply with amazing rapidity. When their numbers become too great to be sustained in these districts, they invade other regions in search of forage, and apparently incited in some degree by a migratory instinct which impels them to go farther from their natural homes than is necessary to obtain an adequate supply of food. For some reason not known, the swarms from any particular district always take flight in a certain direction and never pass beyond certain well defined limits. For thousands of years each swarm from the central breeding grounds of any region infested by these insects has followed the course of its predecessors. Still more remarkable is the fact that swarms which are hatched from eggs laid in the productive regions visited by locusts driven there by hunger, or by the migratory instinct, take their flight in the opposite direction to that of their progenitors and migrate from the fertile fields in which their lives began to the comparatively barren regions from which the parent swarms removed.

In their flight the swarms keep at a height of at least 40 ft. above the ground, and sometimes rise to several hundred ft. Their progress is gradual; and wherever they alight to feed the destruction of vegetation is complete. The distance traversed depends on many circumstances, doubtless largely on the force of the wind, but 1,000 m. is not an extraordinary stretch for some of

the old world species to cover.

The various species of the L. have their special homes in which they breed and from which their armies go



Locust (Acrydium migratorium).

forth to devastate other regions. The Acrydium migratorium is the most common and most destructive species in the old world. Its home is on the steppes of Asia, and in its migrations it visits large areas in Asia and e. Europe. The Acrydium peregrinum is terribly destructive in Africa and tropical Asia. In the United States the principal species are the Caloptenus femur-rubrum, a red legged 'grasshopper' which is distributed over a large area and occasionally is destructive to crops in the Middle and New England States; and the Caloptenus spretus, which has its breeding grounds in Colorado and adjacent elevated regions, and which frequently devastates large areas w. of the Mississippi river.

Prior to 1818 the *C. spretus*, often called the Rocky Mountain L., was comparatively unknown, and it did not attract general attention until 1864 when it was very destructive in portions of the Northwest. During the summers 1873–76 it swept over a large area and caused enormous loss to inhabitants of the Mississippi Valley: the damage in a single year was estimated at fifty million dollars, bringing thousands of farmers to the verge of

starvation. Since 1876 the invasions have been confined to a much smaller area and have been far less disastrous. In elevated regions of Colorado and portions of Oregon, Idaho, Utah, Wyoming, and Montana, and in that part of the British possessions n. of this section as far as 54th parallel of latitude, this species of L. is always found. It occasionally visits the w. part of Manitoba and large portions of N. and S. Dakota and Nebraska. In these localities it works great ravage. It also breeds here for a few years, but does not remain permanently. A large part of the remainder of the great agricultural region w. of the Mississippi is liable to invasion, but the

insects remain only one season.

Like other species of the L. the C. spretus multiplies with amazing rapidity. From their natural breeding grounds in the mountainous regions, vast swarms go to the fertile sections which have been brought under cultivation. Here they not only devour the vegetation, but the females deposit millions of eggs in the soil. The next season the insects hatched from these eggs work great havoc until they obtain wings, when they migrate to the higher lands which form the natural home of the species. They are said to be less vigorous, though scarcely less voracious, than those hatched in the more elevated regions. The eggs are deposited in the ground in tubes, each of which contains not less than two dozen eggs. As each female lays from two to four of these tubes the multiplication of a large swarm is almost incalculable. The tubes are composed of mucous matter and serve to protect the contents from injury by contact with the soil, while offering little obstruction to the hatching of the eggs or the egress of the young insects. The eggs remain intact during the winter. The period of hatching varies from March until May, according to the temperature of the region in which the eggs are laid. The young commence their destructive work almost as soon as hatched, but do not obtain wings for about seven weeks. During this brief period they moult five times. There is usually but one brood per year, though a second brood is sometimes hatched, but too late in the season to become vigorous or to do much damage to crops.

Fortunately for agriculturists the L. has numerous enemies, some of which are quite formidable. Among them are many insectivorous birds and mammals, and various reptiles and beetles. Vast numbers of eggs are destroyed by insects, and the L. is preyed upon by sev-

eral destructive parasites.

Various remedial measures have been adopted, but thus far with little effect. While on its devasting march the L. invariably prefers 'death to a retreat,' and all efforts are powerless to prevent the progress of the vast army in its chosen course. Millions may be destroyed, but millions more march over the bodies of the slain. Consequently the efforts to check an inroad of these

small but formidable creatures by digging trenches, the use of heavy rollers with which to crush them, of oil pans drawn over the fields by horses, or of machines for catching them in bags, accomplish but little. For destroying large swarms these measures are wholly inadequite. Efforts to prevent the hatching of the eggs are fur more efficient. By harrowing the land late in the fall, vast numbers of eggs will be destroyed. The burning over of the land after the grass has obtained a good start in the spring is also useful on mowings and pastures. It is claimed that the free use of coal tar will serve as a partial protection against the attacks of the But the most certain method of preventing losses by their depredations seems to be the growing of crops which mature early and are ready to be removed from the land before the insects appear. As the region in which they breed becomes more thickly settled and the land is more generally brought under cultivation, it is probable that the numbers of this pest will be greatly diminished and that its ravages will be correspondingly curtailed. The U.S. government has done, and is still doing, very much in investigating the habits of this pest and in giving information and assistance to the residents of the infested districts. In this work several of the state governments co-operate.

LO'CUST TREE: name given in different parts of the world to different trees of nat. ord. Leguminosæ.—The Carob Tree (Ceratonia siliqua) is often called L. T. in the countries bordering on the Mediterranean, and its pods are the locust beans of the shops: see CAROB. A kind of effervescing beer, made from locust or carob pods, has been sold in London.—The Locust Tree of America (Robinia pseudacacia), called also the False Acacia, or THORN ACACIA, and on the continent of Europe and in Britain, very generally the ACACIA, is a valuable and extremely beautiful tree: see Robinia. Its wood, known as Locust Wood, is useful for all purposes in which great strength, and especially toughness, is required; this latter quality, which it possesses pre-eminently, makes it very valuable for trenails used in ship-building, and large quantities are used for this purpose. valuable also for making the cogs of wheels.—The Honey Locust (q.v.) Tree, of America is a Gleditschia.

—The Locust Tree of the W. Indies is Hymenæa courbaril, gigantic tree, whose pods also supply a nutritious matter, a mealy substance in which the pods are im-It is sweet and pleasant, but apt to induce diarrhea when recently gathered, which property, how-ever, it loses when kept for a short time. A decoction of it, allowed to ferment, makes a kind of beer. The bark of the tree is anthelmintic; it yields a kind of resin called Anime (q.v.), and it is valuable as a timber-tree, the timber (also known as Locust Wood) being closegrained and tough, and in request in England for trenails, in which form it is generally imported.

LODE-LODGE.

LODE, n. lod [AS. lad; Icel. leid, a way: AS. lædan; Icel. leida, to lead, to conduct]: among miners, a metal-liferous or ore-producing mineral vein. They are crevices—more or less vertical, produced by contraction, or the mechanical disturbance of the rock, which have subsequently been filled with metallic ores. Lodestone, or Loadstone (q.v.), tin-stone; magnetic iron ore.—Note. Lodestone and Lodestar are other and more correct spellings of Loadstone and Loadstar.

LODÈVE, lo-dāv' (ancient Luteva in Gallia Narbonensis): town of s. France, dept. of Hérault, on the Ergue, in a beautiful valley, 32 m. n.w. of Montpellier. It is inclosed by walls, has a cathedral, with manufactures of woolen cloths. Pop. 10,000.

LODGE, n. loj [F. loge, a hut or small apartment; loger, to sojourn—from It. loggia—from mid. L. laubia, a lodge: O.H. G. laubja, a hut of leaves]: a small house or cottage at the gate of an approach to a mansionhouse; a small house in a forest, etc.; a meeting or club of Freemasons: V. to lay or deposit for safe keeping; to place or plant; to fix or settle in the mind; to furnish with a temporary dwelling; to reside in hired apartments; to reside temporarily. Long'ing, imp.: N. a place of rest or temporary residence. Longings, n. plu. a room or rooms hired in the house of another (see below). Lodged, pp. lojd. Lodged, in her., a beast of chase, as a stag, is said to be lodged when lying down with its head erect: a beast of prey in the same position is said to be couchant. Lodger, loj'er, one who lives in a hired room or rooms in the house of another. Long'-MENT, -mënt, the act of lodging; a being placed or deposited at rest for keeping for a time; accumulation; collection; in mil., a work thrown up by besiegers during their approaches in some dangerous post to secure it from being retaken, and to protect the troops from the enemy's fire. Lodging-House, a house in which a room or rooms furnished are let. Lodging-Money, allowance, in the British army, granted to officers and others, for whom suitable quarters cannot be provided in barracks. To LODGE AN INFORMATION, to make a formal complaint or accusation to the police or a magistrate.—Syn. of 'lodge, v.': to place; plant; fix; settle; harbor; cover;

LODGE, löj, Henry Cabot, Ph.D., Ll.B.: author: b. Boston, 1850, May 12. He graduated at Harvard Univ. 1871, and its law school 1874; was univ. lecturer on American history 1876-9; editor North American Review 1873-6, and International Review 1879-81; member of the Mass. legislature 1880,81; delegate to the republican national conventions 1880-1884; rep. in Congress 1866-92; elected U. S. Senator 1893 and 1899. He has edited two series of Popular Tales and selected Ballads and Lyrics (Boston, 1881) and The Works of Alexander Hamilton, 9 vols. (New York, 1885), and published The

Land Law of the Anglo-Saxons and Life and Letters of George Cabot (Boston 1877); Short History of English Colonies in America (New York 1881); Life of Alexander Hamilton (1882); Life of Daniel Webster (1883); and Studies in History (1884).

LODG'INGS: part or all of a house rented by one person of another for house-keeping purposes, or as a sleeping-place. The word has passed through several grades of meaning in different places and at different times, till it is now almost impossible legally to distinguish a lodger from a boarder, a hotel guest, or a transient or permanent tenant. The act of lodging originally implied only a person's sleeping at night on the premises of another, the provision of supper and breakfast being no part of the agreement between the parties. In large cities many persons hire furnished rooms in a house to sleep in and take their meals elsewhere. Where meals also are furnished, and the occupation of the sleeping apartment extends over a single night, the person becomes in the American sense a boarder; and he may speak of his quarters as L., but more generally will call them his boarding-house. A lodger may remain such or become a boarder; and a boarder may remain such, or become a mere guest in the American hotel sense. A hotel guest may be a lodger, that is a sleeper for a single night; or a guest, remaining as long as he pleases and taking his meals in the hotel or elsewhere; or a permanent boarder, sleeping and eating on the premises. L., therefore, may comprise a whole furnished house or a single room with sleeping accommodations; may be occupied one night or for any period; may be had with or without board; and may be hired or rented in a hotel or on the premises of a private family. Different local legislation in various states tends still further to cloud the distinction between the several grades of meaning of L. Laws defining the privileges and responsibilities of landlords and tenants and of hotel and inn-keepers and their guests; those governing actions for the recovery of debt, exemptions from levy and forced sale, and a variety of liens; and in many states local excise laws, are applicable in various degrees.

LODI, $l\bar{o}'d\bar{e}$: flourishing town of n. Italy, province of Milan, on the right bank of the Adda, 19 m. s. of Milan, on a gentle slope in a highly fertile district, and contains (1881) 18,689 inhabitants. It is protected by walls and a strong castle, erected by the Visconti, but lately appropriated as a military hospital. L. is a bishop's see and the seat of a college, and contains many fine buildings. Its chief manufactures are linens, silks, chemical products, and Majolica porcelain, for which it is famous. Its great trade is in cheese, especially the famous species known as Parmesan, which, instead of being manufactured at Parma, as one might infer from the name, is made exclusively in the vicinity of L., where 80,000 cows are kept for the purpose.—Lodi Vecchio, or Old Lodi,

is a rained village about 5 m. w. of the modern town: it was colonized by the father of Pompey the Great, hence its name, Laus Pompeia, corrupted into Lodi. L. is notable for the victory of the French under Bonaparte, over the Austrians, 1796, May 10, when the long and narrow bridge was carried by the French columns, notwithstanding a tremendous fire from the Austrian batteries.

LODICULE, n. lŏd'i-kūl [L. lodic'ŭla, a small coverlet]: in bot., a scale at the base of the ovary of grasses.

LODZ, $l\bar{o}dz$ (Russ. $Lo\bar{d}si$): town of Poland, govt. of Piotrkow, 75 m. s.w. of Warsaw. After Warsaw, L. is the largest town in Poland, and has thriving industries and a brisk trade. The inhabitants are mostly of German origin. Pop. (1885) with extended area 113,413.

LOESS. n. lō'es [German]: loamy deposit of Pleistoeene age, occurring in the valleys of the Rhine and the Danube. It is a pulverulent yellowish-gray loam, homogeneous and non-plastic, and consists of a mixture of elay and carbonate of lime. It usually tends to cleave in vertical planes, and thus forms eliffs where streams intersect it. In the Rhine, it apparently once covered (see J. Geikie, Prehistoric Europe, 1881) the whole valley and its tributaries, reaching to a considerable height up the bounding mountains. It has subsequently been greatly abraded, a fringe only of the deposit being left on the mountain-sides, and occasionally some outliers in the widest parts of the valley; the materials have been carried down by the river, and rearranged, as a newer L. or alluvium, in Belgium and Holland. This continuous deposit of fine sediment suggested the notion to the original observers of an enormous lake, whose barrier was at the narrow gorge of the Rhine at Bingen. the L. oecurs further down; besides, the contained fossils are not lacustrine, but those of land-animals (Elephas and Rhinoceros), and land-shells (Helix, Pupa, and Succinea). L. is now believed to be the moraine mud of the Alpine glaciers, which was spread out gently in the valleys of the Rhine and Danube, as the land gradually emerged from the sea. The L. is generally from 30 to 50 ft. in thickness, though sometimes as much as 200 ft. Fossils are not generally distributed in the strata, though sometimes locally abundant. They consist chiefly of land-shells of species now inhabiting the same region.

LOFFE, v. löf: an OE. spelling for laugh.

LOFODEN, lŏ-fō'dėn, or Loffoden, lŏf-fō'dėn, or Lofoten, lŏ-fō'tėn: chain of islands off the n.w. eoast of Norway, lat. 67°—69° 15' n., stretching s.w. and n.e. abt. 130 m.—including the Vesteraalen Islands, a division of the L. groups e. and n. of the Raftsund: total area 1,560 sq. m. The largest islands are Hindöe (864 sq. m.), Andöe, and Langöe, Ost Vaagen, West Vaagen, and Flagstadöe. All are rugged and mountainous, indeed, some of the eminences in Vaagen attain a height of 4,000 ft.

and are covered with perpetual snow. The climate is decidedly milder than on the main land of Norway: the isothermal line marking mean Jan. temperature 32° F., passing s. to Copenhagen. The glens near the coast have a temperature mild enough to allow cultivation of oats, barley, and potatoes. The islanders subsist chiefly by the fishery established previous to the 11th c., which has always attracted many inhabitants of the mainland also. The average number of boats is 4,000, manned by 20,000 fishermen; and the produce of the cod-fishery is estimated at 9,000 tons of dried fish, 22,000 barrels of oil, 6,000 barrels of roe. After the cod-fishery has terminated (in Apr.), the herring-fishing season comes on, and continues throughout the summer, forming an important industry. Several other kinds of fish are caught, and lobsters and oysters in abundance. The inhabitants are expert boatmen; but fishing is attended with danger, on account of the sudden and violent storms from the west, and of the strong currents which set in between the islands: see Malström. The people are a mixed race, partly of Scaninavian, partly of Lappish descent. Permanent pop. estimated 20,000.

LOFT, n. löft [Icel. lopt, the sky or air: Dan. loft, ceiling, loft (see Lift 1)]: a floor above another, especially one where anything is stored, commonly under the roof; a gallery in a hall or church, as organ-loft. Lofty, a. löf'tĭ, elevated in place, condition, character, sentiment, or diction; dignified; proud; haughty; sublime. Lof'tily, ad. -lĭ, in a lofty manner; sublimely; haughtily. Lof'tiness, n. -nĕs, height; elevation, as in place or position; pride; dignity; haughtiness. Rooploft, a loft or gallery in a church on which the rood—i.e., a representation of the Savior on the cross—was set up to view.—Syn. of 'lofty': tall; elevated; high; stately; exalted; majestic; noble.

LOG, n. lög [Icel. lág, a felled tree: Dut. log, unwieldy, heavy (see CLOD)]: an unhewn or undressed piece of timber not adapted to any special purpose; a large heavy piece of firewood; among seamen, a little board so fixed as to remain upright and motionless in the water, while the ship moves on, for ascertaining the rate of sailing (see below): a school register of daily proceedings, progress, and remarks. The log or logвоок, a book used in registering the rate of a ship's velocity, as indicated by the log (see Log, in Navigation). Log-Line, line thrown over the stern of a ship with the float or log attached, for measuring the rate of motion (see Knor, in Navigation). LOGMAN, one who hews timber. Logwood, a red heavy wood (see below). Logged, a. logd, or Water-Logged, a. rendered motionless as a log; disabled from motion or action by water, as a ship. Log-house, a house built of rough-hewn logs, as in the backwoods of N. America. To LIE LIKE A LOG, to lie heavy and dead without a sign of motion. Note. - The Log of a ship is a contrivance to retain the distant and of a line unmoved in the water while the ship moves onward, and may have been originally only a log of wood thrown out behind: otherwise we may connect log with OE. log, to oscillate: Dan. logre, to wag the tail: W. llag, loose, slack; thus the signification of 'inertness or slowness' may come through the idea of what is 'slack or loose'—see Wedgwood.

LOG, n. lŏg [Heb.]: a Jewish liquid measure, containing about five-sixths of a pint.

LOG, log: contr. for Logarithm: see Logarithms.

LOG, v. lög, or Logger, v. lög'gér [Dan. logre, to wag the tail: F. locher, to shake from looseness: Ger, locker, loose]: in OE., to oscillate. Log'ging, imp. Logger, pp. lögd.

LOG, or Log-ship, in Navigation: instrument by which a ship's rate of motion through the water is measured. Its simplest form is a triangular piece of light wood, leaded so as to float vertically; this is connected with the log-line so that its flat surface is at right angles to the ship's course. When thrown out—attached to the log-line (see Knot)—the log meets with such resistance that it theoretically remains stationary in the water, and the log-line passing freely out shows the speed of the vessel: see Knot, in Navigation. There are many improved logs, with complicated apparatus, for marking the way made, changes of direction, etc. The log and line are known to have been used as early as 1570. Com-



Log.

puting by the log is an uncertain operation, allowance having to be made for numberless contingencies. In ships of war, it is usual to heave the log every hour; in merchantmen, every two hours. The log-board is a board on which the hourly results of the log-heaving are recorded in chalk, with the wind's direction, and other particulars, for the guidance of the officer in charge. The contents of the log-board are entered daily in the log-book, with all particulars essential to the history of the voyage, as ships spoken, icebergs seen, land sighted, etc. The log-book thus becomes a rough journal; and it is compulsory upon every master of a vessel to keep it properly, and to have it ready for inspection by any ship of war of his own nation whose captain may require its production.

LOGAN: city, cap. of Cache co., Utah; on Logan river and the Union Pacific r.r., 66 m. n. of Ogden, 90 m. n. of Salt Lake City. L. is in an agricultural and mining region; is the seat of Brigham Young Coll., the New Jersey Acad. (Presb.), and the Utah Agricultural Coll. and experiment station. Pop. (1880) 3,396; (1890) 4,565; (1900) 5,451.

LOGAN, lō'gan: 1720-80; name taken by an Indian chief, Tah-gah-jute, in honor of Gov. Logan of Penn., who had befriended him. Until L. was about 50 years of age he lived in Penn. (where his father had been a chief of the Cayugas), and was known as of a noble, brave, and friendly nature. He removed to the shores of the Ohio, 1770, and fell into habits of intemperance. In 1774 a band of lawless whites murdered his family, and an insane desire for vengeance took possession of him. He devoted himself to rousing the tribes to a savage war, which raged with terrible cruelties for six years. L. was reported to have taken 30 scalps with his own hand. When the Indians were finally defeated, L. refused to join the other chiefs in suing for peace. The address to Lord Dunmore, gov. of Va., which is attributed to L. on this occasion, in Thomas Jefferson's Notes on Virginia, is of very doubtful authenticity; it is in the most pathetic and impressive style of Indian eloquence. L.'s end was sad. He was mastered by his vice of intemperate drink, became quarrelsome, and was killed by one of his relatives in self-defense.

LO'GAN, JOHN ALEXANDER: 1826, Feb. 9—1886, Dec. 26; b. Murphysborough, Jackson co., Ill.: statesman. He received a common-school and collegiate education; served through the Mexican war as private and 1st lieut.: was elected clerk of Jackson co. 1849; and graduated at Louisville Univ., was admitted to the bar. He was elected a member of the legislature 1852. He served four terms in the legislature; was prosecuting atty. 1853-57; was elected member of congress 1858 and 60; and resigned his seat and entered the Union army as col. 31st Ill. vols. 1861, Sep. He led his regt, in the battle of Belmont and the attacks on Forts Henry and Donelson; was promoted brig.gen. 1862, Mar.; commanded the 3d div. 13th army corps in the n. Mississippi campaign; was promoted maj.gen. vols. 1862, Nov.; took part in the battles of Port Gibson, Raymond, Jackson, and Champion Hills, and the siege of Vicksburg: succeeded Gen. Sherman in command of the 15th army corps 1863, Nov.; and was placed in command of the Army of the Tennessee on the death of Gen. McPher-On the fall of Atlanta, 1864, Sep. 1, he returned home to take part in the presidential canvass, and at its close rejoined the army and served in the field till 1865, Aug., when he resigned his commission. Pres. Johnson appointed him U.S. minister to Mexico the same year, but he declined the office. In 1866 he was again elected member of congress; 1868 was a manager on the part of

LOGANIACEÆ-LOGAŒDIC.

the house of representatives in the impeachment trial of Pres. Johnson; 1868 and 70 was re-elected to congress; and 1870, 78, and 85 was elected U. S. senator. The republican national convention 1884 nominated him for vice-pres., with James G. Blaine for pres., but both were defeated in the election. While a member of each house of congress he took part in the most important debates, and delivered several speeches of great force. As soldier and legislator he was aggressive, persistent, and unyielding. He wrote The Great Conspiracy; its Origin and History (New York 1886), and The Volunteer Soldier of America (Chicago 1887).

LOGANIACE Æ, lō-găn-ĭ-ā'sē-ē: natural order of corollifloral exogens, consisting of trees, shrubs, and herbaceous plants, with opposite entire leaves, and usually with stipules, which adhere to the footstalks, or form sheaths. The calyx is 4-5-partite; the corolla hypogynous, regular or irregular, 4-5 or 10-cleft. The stamens arise from the corolla. The ovary is generally two-celled; there is one style. The fruit is a capsule, a drupe, or a berry. Of the 162 known species, a few occur in Australia and in temperate N. America; the rest are tropical or sub-tropical. No nat. ord. of plants is more strongly characterized by poisonous properties, especially by Strychnine (q.v.). It includes the genus Strychnos (q.v.; and see Nux Vomica) and the Woorali Poison (q.v.). See alse Spigelia.

LOGANSPORT, lō'ganz-pōrt: city, cap. of Cass co., Ind., on the Wabash and Erie canal, at the confluence of the Wabash and Eel rivers, 75 m. n.w. of Indianapolis; on the Pittsburgh Cincinnati and St. Louis, the Toledo Wabash and Western railroads, the Logansport Crawfordsville and South Western, and the Detroit Ecl River and Illinois railroads. It is the commercial centre of an extensive agricultural district—dealing in grain, pork, and black-walnut and poplar timber. Good buildingstone is found in the vicinity. L. is well-laid out and handsomely built. The works of the Pittsburgh Cincinnati and St. Louis railroad here cover 25 acres and employ 600 men. Pop. (1890) 13,328; (1900) 16,204.

LOGAN-STONES, n. plu. lō'găn-stōnz, or Lo'GANS, n. plu properly Logging-stones, n. lŏg'gĭng- [OE. log, to oscillate: Dan. logre, to wag the tail: W. llag, loose]: weather-worn blocks of stone so finely balanced on their pivot-like bases that a very ordinary force suffices to make them rock from side to side; also called rocking-stones.

LOGAŒDIC, a. lŏg-a-ēd'ik [Gr. logaoi'dikos—from logos, speech, prose; aoidō, poetry, verse]: in pros., term applied to verses in which the stronger dactylic rhythm passes into the weaker trochaic, so that they seem to partake of the natures both of prose and poetry.

LOGARITHMIC-LOGARITHMS.

LOGARITH'MIC (or Logist'ic) CURVES: curves whose abscissæ are proportional to the logarithms of the corresponding ordinates; consequently, if the abscissæ increase in arithmetical progression, the ordinates will in geometrical progression. The equation to these curves being $x = a \log y$ (a being constant), $y \frac{dx}{dy} = a$, showing that the subtangent has the same value for all points of the curve, and is the Modulus (q.v.) of the system of logarithms represented by the particular curve. This curve has another remarkable property—viz., that the area contained between any two ordinates is equal to the difference of the ordinates multiplied by the constant subtangent.

LOGARITH'MIC (or Logist'ic) SPIRAL: curve described by a point which moves uniformly along a uniformly revolving straight line. This curve has several remarkable properties, some of which are analogous to those possessed by the logarithmic curve. Its involute and evolute are the same with itself. Newton showed that if the force of gravity had varied inversely as the cube of the distance, the planets would have shot off from the sun in logarithmic spirals. The equation to the curve is $r = ca^x$.

LOGARITHMS, n. plu. log'ă-rithmz, Log'arithm, n. sing. -rithm [Gr. logos, a word, a ratio; arithmos, number]: system for facilitating certain calculations by substituting for the series of natural numbers a series of artificial numbers in such a way that while the natural numbers increase in geometrical progression, their logarithms increase in arithmetical progression only; e.g., these two simple series of numbers, one proceeding from unity in geometrical progression, the other from 0 in arithmetical progression:

Geometrical series, 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, etc. Arithmetical series, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, etc.

Here the ratio of the geometrical series is 2, and any term in the arithmetical series expresses how often 2 has been multiplied into 1 to produce the corresponding term of the geometrical series; thus, in proceeding from 1 to 32, there have been 5 steps or multiplications by the ratio 2; in other words, the ratio of 32 to 1 is compounded five times of the ratio of 2 to 1. From this conception of the relation came the name Logarithms for the arithmetical series, the word logarithm meaning 'the number of the ratios.' Logarithmic, a. log'ă-rith'mik, or Log'ARITH'MICAL, a. -mi-kal, consisting of or done by logarithms. Log'ARITH'MICALLY, ad. -li.—L. have uses which appear from considerations like the following. The sum of any two L. (as we shall now call the lower series) is the logarithm of their product; e.g., 9 (= 3 + 6)is the logarithm of 512 ($= 8 \times 64$). Similarly, the difference of any two L. is the logarithm of the quotient of the numbers; a multiple of any logarithm is the loga-

LOGARITHMS.

rithm of the corresponding number raised to the power of the multiple, e.g., $8 (= 4 \times 2)$ is the logarithm of 256 $(= 16^2)$, and a submultiple of a logarithm is the logarithm of the corresponding root of its number. In this way, with complete tables of numbers, and their corresponding L., addition is made to take the place of multiplication, subtraction of division, multiplication of involution, and division of evolution.

To make the series above given of practical use, it would be necessary to complete them by interpolating a set of means between the several terms, as will be explained below. We have chosen 2 as the fundamental ratio, or base, as being most convenient for illustration; but any other number (integral or fractional) might be taken; and every different base, or radix, gives a different system of logarithms. The system now in use has 10 for its base; in other words, 10 is the number whose

logarithm is 1.

The idea of making use of series in this way seems to have been known to Archimedes and Euclid, without resulting in any practical scheme; but by the end of the 16th c., trigonometrical operations had become so complicated that several mathematicians were at work to devise means of shortening them. The real invention of L. is now universally ascribed to John Napier (q.v.), Baron of Mcrchistoun, who 1614 printed his Canon Mirabilis Logarithmorum. His tables give logarithms only of sines, cosines, and the other functions of angles; they also labor under the three defects of being sometimes + and sometimes —, of decreasing as the corresponding natural numbers increase, and of having for their radix (the number of which the logarithm is 1) the

number which is the sum of
$$1+1+\frac{1}{1.2}+\frac{1}{1.2.3}+$$
,

These defects were soon remedied: John Speidell, 1619, amended the tables in such a manner that the L. all became positive, and increased along with their corresponding natural numbers. He (6th ed. 1624) constructed a table of Napier's L. for the integer numbers, 1, 2, 3, etc., up to 1,000, with their differences and arithmetical complements, besides other improvements. Speidell's tables are now known as hyperbolic logarithms. But the greatest improvement was made 1615, by Prof. Henry Briggs (q.v.), of London, who substituted for Napicr's inconvenient 'radix,' the number 10, and succeeded before his death in calculating the L. of 30,000 natural numbers to the new radix. Briggs's excrtions were ably seconded; and before 1628 the logarithms of all the natural numbers up to 100,000 had been computed. Computers have since occupied themselves rather in repeatedly revising the tables already calculated, than in extending them.

Construction of Tables.—The following is the simplest method of constructing a table of L. on Briggs's system.

LOGARITHMS.

The log. of 10 = 1; the log. of 100 (which is twice compounded of 10)=2; the log. of 1000=3; etc.; and the L. of all powers of 10 can be found in the same manner. The intermediate L. are found by continually computing geometric means between two numbers, one greater and the other less than the number required. Thus, to find the log. of 5, take the geometric mean between 1 and 10, or 3.162..., the corresponding arithmetic mean (the log. of 1 being 0, and that of 10 being 1.) being .5; the geometric mean between 3.162... and 10, or 5.623..., corresponds to the arithmetic mean between 5 and 1 or .75; the geometric mean between 3.162... and 5.623..., or 4.216..., has its logarithm = $\frac{1}{2}(.75 + 5)$ or .625; this operation is continued till the result is obtained to the necessary degree of accuracy. In this example, the 21st result gives the geometric mean = 5.000,003, and the corresponding arithmetic mean = :698,970, which is in ordinary calculations used as the logarithm of 5. Since division of numbers corresponds to subtraction of L., and since $2 = \frac{10}{5}$, the log. of $2 = \log$. 10 - log. 5 = 1 -·698970=·301030. The L. of all prime numbers are found in the same way as that of 5; those of composite numbers are obtained by the addition of the L. of their ·477121 = ·778151. This method, though simple in principle, involves an enormous amount of calculation; and the following method, which depends on the modern algebraic analysis, is much preferable. By this method, L. are considered as indices or powers of the radix; thus, $10^{9}=1$, $10^{\cdot 3)103}=2$, $10^{\cdot 477121}=3$, $10^{2}=100$, etc.; and the laws of L. then become the same as those of indices. Let r represent the radix, y the natural number, x its logarithm; then $y = r^x$, or, putting 1 + a for r, $y = (1 + a)^x$; and it is shown by the binomial and exponential theorems (see the ordinary works on Algebra) that $y=1+Ax+\frac{A^2x^2}{1.2}+\frac{A^3x^3}{1.2.3}+$, etc., where $A=r-1-\frac{1}{2}$ $(r-1)^2+\frac{1}{3}(r-1)^3-$, etc., the former equation expressing a number as the sum of different multiples of its logarithm and the radix. If $\frac{1}{A}$ be substituted for x, then $y = r^{\frac{1}{A}} = 1 + 1 + \frac{1}{1.2} + \frac{1}{1.2.3} +$, etc. = 2.71828182... which, as above mentioned, is Napier's radix, and is generally called e; then $r^{\frac{1}{A}} = e$, or r = e, or A is the logarithm of r to the base or radix e. Then, referring to the above-mentioned value of A, we have, $\log_e r$ (i.e., $\log_e r$ to the base e)= $r-1-\frac{1}{2}(r-1)^2+\frac{1}{3}(r-1)^3-\text{etc.}$, or, as before, putting 1+a for r, $\log_e(1+a)=a-\frac{a^2}{2}+\frac{a^3}{3}-\text{etc.}$; a series from which $\log_e(1+a)$ cannot be found, unless a be fractional. However, if we put—a for a, \log . (1-a) $= -a - \frac{a^2}{2} - \frac{a^3}{3} - \text{etc.}$; and subtracting this expression from the former, $\log_{e} (1+a) - \log_{e} (1-a)$ or \log_{e} $_{e}\left(\frac{1+a}{1-a}\right) = 2\left(a + \frac{a^{3}}{3} + \frac{a^{5}}{5} + \text{etc.}\right)$, and, for the sake of convenience, putting $\frac{u+1}{u}$ for $\frac{1+a}{1-a}$, in which case, a= $\frac{1}{2u+1}$, we finally obtain $\log_{e} \frac{u+1}{u} = 2\left\{\frac{1}{2u+1} + \frac{1}{3(2u+1)^3}\right\}$ $+\frac{1}{5(2u+1)^5}$ + etc. $\left.\right\}$, or log. $(u+1) = \log_e u + 2\left\{\frac{1}{2u+1}\right\}$ $+\frac{1}{3(2u+1)^3}+\frac{1}{5(2u+1)^5}+$ etc. \right\}. If 1 be put for u in this formula, the Napierian logarithm of 2 is at once obtained to any degree of accuracy required; if 2 be put for u, the Napierian logarithm of 3 can be calculated, etc. Now, as L. of any system have always the same ratio to one another as the corresponding L. of any other system whatever its base, if a number can be found, which, when multiplied into the logarithm of a certain number to one base, gives the logarithm of the same number to another base, this multiplier will, when multiplied into any any logarithm to the first base, produce the corresponding logarithm to the other base. The multiplier is called the Modulus (q.v.), and for the conversion of Napierian into common or Briggs's logarithms, is equal to 4342944...; so that to find the common logarithm of any number; first, find the Napierian logarithm, and multiply it by 4342944...

As in Brigg's system, the logarithm of 10 is 1:, and that of 100 is 2:, it follows that all numbers between 10 and 100 have, for their L., unity + a proper fraction; in other words, the integer portion of the L. of all numbers of two figures is unity; similarly, the integer portion of the L. of numbers between 100 and 1000 is 2, and, in general, the integer portion of the logarithm of any number expresses a number less by unity than the number of figures in that number. This integer is called the *characteristic*, the decimal portion being designated as the

mantissa.

As the logarithm of 1=0, the L. of quantities less than unity would naturally be negative; thus, the logarithm of $\frac{1}{2}$ would be — ·30103, but, for convenience in working, the mantissa is kept always positive, and the negative sign affects only the characteristic; the logarithm of $\frac{1}{2}$ or ·5 would thus be 1.69897, the characteristic in this and similar cases, expressing, when the fraction is reduced to a decimal, the number of places at which the first figure stands removed from the decimal point; thus, the logarithm of ·0005 is 4.69897.

Directions for the use of L. in calculation are prefixed to any set of Tables. The history of the discovery is

given in the preface to Dr. Hutton's Tables.

The tables most distinguished for accuracy are the French tables of Callet, Lalande, Bagays; Hutton's, and those which Mr. Babbage produced with the aid of his ingenious calculating machine; and the German tables of Gauss, Schrön, Bruhns, Von Vega, Bremiker.

LOGGATS, n. plu. $l \delta g' g \delta t s$ [Dan. log re, to wag the tail: prov. Sw. loka, to work a thing to get it loose]: in OE., an old game, something like nine-pins and skittles.

LOGGER-HEAD, n. lŏg'gėr-hĕd [Dut. log, unwieldy, heavy, and Eng. head: Low Ger. luggern, to lie lazily in bed: comp. Gael. loigear, a rough doltish person]: a dunce; a blockhead; a species of sea-turtle. At or To logger-head is the same in sense as block-head; logger is one engaged in cutting down and preparing logs of timber.

LOGGIA, n. löj'â, Loggie, n. plu. löj'ë [Italian]: open arcade, inclosing a passage or open apartment. It is a favorite class of building in Italy and other warm countries. The Loggia de' Lanzi at Florence is one of the finest examples extant; and well-known are the Loggie of the Vatican, arcaded passages round the interior of the cortile of the palace, ornamented with beautiful paintings and arabesques by Raphael and his pupils.

LOGIA, n. log'ia [Gr. logia (plu. of logion), announcement, oracle; Fr. logos, word]: sayings of the Lord Jesus: supposed by some to have formed the content of a body of oral tradition; believed by others to have been contained in a gospel now lost, but extant when Matthew's gospel was written (see Acts xx. 35). On 1897, Jan. 11, Messrs. Bernard P. Grenfell and A. S. Hunt on behalf of the Egypt Exploration Fund found at the ancient Oxyrhyncus, near the modern Behnesa in Egypt, a leaf of papyrus, since assigned by experts to the end of the 2d or beginning of the 3d c., and containing the Greek text of 8 alleged 'logia' or sayings of Christ, each introduced by the formula 'Jesus saith.' Of these 3 are in the canonical gospels, 3 are wholly new, while 2 are illegible. This leaf is the oldest extant record of words spoken by Christ on earthfrom 100 to 150 years earlier than the two oldest Mss. (Vatican and Sinaitic) of the N. T., and is conjectured by some to have formed part of a volume from which our present gospels may have been derived.—See AGRAPHA.

LOGIC, n. lŏj'ĭk [F. logique, the art of logic—from L. logĭca: Gr. logĭkē, with technē, understood, the art of reasoning; logos, speech, reason]: scientific examination and account of that part of reasoning which depends on the manner in which inferences are formed; and of general maxims and rules for constructing arguments, so that the conclusion may contain no inaccuracy which was not previously inserted in the premises; it is the science of the laws of thought, as thought; the art of using reason well in our inquiries after truth, and in our communication of it to others. Logical, a. lŏj'ĭ-kăl, according to the rules of logic; founded on reason; clear; rational; discriminating. Log'ically, ad. -lĭ. Logician, n. lō-jĭsh'ăn, a person skilled in logic.

LOG'IC: briefly the science of reasoning or 'the art of thinking.' It is a scientific account of the laws which regulate the passage in thought from one statement to another, and which must be observed if the thinking process is to be valid. The theory of every operation is later than its performance, and men were accustomed to think correctly long before they began to reflect upon their thinking faculties and the processes by which their results were reached. The attention which Socrates gave to the meaning and justification of general names, is signalized, by Aristotle as the beginning of logical theory. It was Aristotle, himself, however, who first elaborated the idea of the science, and defined its sphere by separating it from the metaphysical questions with which logical discussions are always associated in his prede-The six treatises afterward collected under the name Organon contain the gist of what is still taught as formal L.; but the term L. was probably used first by the Stoics in the wide sense with which we are familiar. Aristotle himself possessed no single name for the science of which he was founder.

The independence which Aristotle conferred on the new science has enabled it to survive to the present day almost without change, and with very few important additions. But while the edifice of Aristotle remains architectonically complete upon its own basis, it has become customary to add to this science of L. proper a second part, Mixed, Material or Inductive L., embracing an account of the methods of science and the conditions of scientific proof. The modern version of the Aristotelian L. is then called, by way of distinction, Pure or Formal Logic. The meaning of this designation is that L., as such, takes no account of the matter of our reasoningsi. e., of the things reasoned about; it deals solely with the form or skeleton of the reasoning process itself. if we say, 'Englishmen are white-skinned,' L. has no occasion to consider the truth of this statement as a matter of fact or science; it deals only with the form of the proposition or judgment as a general logical mold into which any pair of notions may be fitted. It treats the proposition, in short, only so far as it is expressible in

the form 'X is Y.' To this abstraction from all questions regarding the adequacy of our notions and the material truth of our assertions, formal L. owes its comploteness as a science. It looks on thought not as the expression of the truth of things, but as a series of mechanical operations, and its aim is to lay down the general or symbolic forms which these operations must assume in order to insure that the end shall be consistent with the beginning. It is apparent, then, that in any reasoning process, formal L. guarantees that the conclasion is true only if the premises from which the start was made were true. It has accordingly been called the L. of consistency, as opposed to induction, which seeks to be a L. of truth. Pure L. takes its material readymade from the hands of observation, and merely watches over its correct manipulation. Reasoning in the strict logical sense is, in fact, merely analytic; the conclusion only brings to explicit consciousness what was implied or involved in the premises. Formal L. is thus, in its most general aspect, an application, by means of many subordinate rules, of the laws of identity and non-contradiction. Practically, however, it is of great service in clarifying the thought of the individual, though—or more strictly because—in a sense merely teaching him

what he knows already.,

Formal L. is usually treated under the three heads of Notions, Judgments, and Reasonings; or, if regard be had to the verbal expression of thought, the Notion, Judgment, and Reasoning appear respectively as Term, Proposition, and Syllogism. Though pure L. has strictly nothing to say about the formation of general names or the adequacy of our notions, it is customary for logical writers to expound under the first head the nature of generalization and definition—the processes by which our actions are formed and tested. The Judgment, however, may be taken as the unit in L., for it is only in their relation as subject and predicate of a judgment that notions become susceptible of logical treatment. The combination of two judgments (involving three notions), in such a form that a third judgment is deduced from them, constitutes a Syllogism. Pure L. demonstrates the reducibility of the most complex reasonings to a succession of variations on this fundamental type. As an appendix to this exposition of the normal forms of inference, there follows a discussion of the different classes of fallacies to which any deviation from them may give rise. It is in this aspect that L. justifies its claim to be 'a cathartic of the human mind.' like ethics, L. is a normative science; i.e., it does not, like the physical sciences, or like psychology, simply generalize facts. Its laws are not statements of what always happens, but rules of what ought to be done. This distinction contains the answer to the question, at times much debated, whether L. is a science or an art, The question is a dispute about words,

The perception that pure L. treats thought simply as u process of comparison and classification, has induced a number of recent logicians (chiefly English) to attempt an extension of Aristotle's scheme by a thorough-going application of the notion of logical quantity. Thus Sir W. Hamilton maintained that the relation between subjeet and predicate in a proposition is that of logical equation. The proposition, 'All men are mortal,' means, when fully expressed, 'All men are some mortals.' If the predicate be thus explicitly quantified, it is evident that we may substitute for the copula the algebraical symbol of equation. For the consequences of this view in the multiplication of propositional and syllogistic forms, see Quantification of Predicate. line of thought has been further worked out by William Stanley Jevons, who defines inference as 'the substitution of similars.' He would make the proposition run—'All men are mortal men' (All a is ab). De Morgan's formula for the proposition is similar; but his innovations, as well as Boole's development of L: into a branch of mathematics, are rather specimens of the ingenuity of their authors than transcripts of actual thought-processes. They show no signs of taking their place as a permanent addition to logical doctrine. The same may be said of Jevons's Method of Indirect Inference, by which he claims to have reached the same results as Boole without the use of mathematics. The Method consists in 'developing' all the possible combinations of the terms mentioned in the premises, and then proceeding, by elimination of those which violate the conditions there laid down, to reach those combinations consistent with the data. Jevons has applied his principle in the invention of a logical machine which effects this process of counting out with unerring accuracy; but where the terms are multiplied to any extent, the operation is, of course, eumbrous in the extreme.

Bacon is commonly regarded as the founder of Inductive Logic. He put himself at the head of the revolt against the scholastic L. which marked the men of the Renaissance, and, though his own apprehension of scientific method was gravely defective, his eloquence and his position made him the most influential prophet of the scientific movement which Galilei and others had initiated. In fact, he came to supplement the old, not to supersede it; but he allowed his dislike of the abuses of the Aristotelian L. to carry him away into indiscriminate denunciation. Bacon's animus is perhaps excusable as the zeal of the reformer; and it may be granted that in the Aristotelian L., as in Greek philosophy generally, there is a tendency to let the study of words usurp the place of the investigation of facts. The middle ages had exaggerated this tendency by habitually assuming the distinctions existing among things to be correctly and adequately rendered by traditional names. Beyond this, Bacon's diatribes against 'syllogism' (q.v.) show misappre-

LOGISTICS-LOGOGRAM.

hension of the real function of formal L., which, as has been seen, makes no pretensions to be an instrument of scientific discovery. Inductive theory has received many developments since the time of Bacon, notably at the hands of J. S. Mill. The progress of science has made it casier to formulate its methods and to determine the conditions of valid scientific proof. It is sufficient here to point out that, whereas in formal or deductive L. reasoning proceeds from a whole to the particulars included under that whole, we seem in inductive L. to rise, in reliance on the uniformity of nature, from observation of particulars to the enunciation of a universal proposition: see Induction. The profound interest and value of these investigations, when compared with the rigid framework of symbols with which pure L. presents us, may well lead men to overestimate the former at the expense of the latter. But the two disciplines are essentially distinct; and the exactness even if not the scientific completeness of pure or formal L. will always constitute it at least a valuable educational instrument.-The term L. has been made to cover an astonishingly wide range of matters connected with thought and its processes. The variety of the fields claimed by different writers on this science, almost justifies the question whether L. can be defined as a science in terms appropriate to any one member of the great family of sciences. -See, besides writers mentioned above, Abp. Whately, Jeremy Bentham (Essays); also of American writers, Prof. Bowen of Harvard, Wilson of Cornell, etc.—See, beside titles above noted, DEDUCTION: GENERALIZA-TION: ABSTRACTION: DEFINITION: ASSOCIATION IDEAS: PROPOSITION: REASON—REASONING: ETC.

LOGISTICS, n. plu. lō-jis'tiks [Gr. logis'tikos, skilled in calculating—from logos, a word, a number; logistēs, an accountant]: system of arithmetic in which numbers are expressed in a scale of sixty; the science of number; in mil., the art of moving troops, in which is comprised the details of marches and the fixing of places for encampments and cantonments. Logistic, see Logarithmic.

LOGOGRAM, lŏg'o-grăm [Gr. logos, a word; gramma, a letter]: simply a complicated or multiplied form of the Anagram (q.v.), where the puzzle-monger, instead of contenting himself with the formation of a single new word or sentence out of the old, by transposition of the letters, racks his brain to discover all the words that may be extracted from the whole or from any portion of the letters, and throws the whole into a series of verses in which synonymic expressions for these words must be used. The puzzle lies in ascertaining what the concealed words are, and through them, what is the primary word out of which they have all been extracted. A specimen is given in Henry B. Wheat'ey's book on Anagrams (1862), in which, out of the word 'curtains,' no less than 93 smaller words are framed.

LOGOGRAPHERS-LOGOMETRIC.

LOGOGRAPHERS, lō-gŏg'ra-fērz: name by which the Greeks designated the historians previous to Herodotus. The L. described in prose the mythological subjects and traditions which had been treated of by the epic poets, supplementing them by traditions derived from other quarters, so as to form, at least in appearance, a connected history; their works, however, seeming to be intended rather to amuse their readers, than to impart accurate historical knowledge. The term L. was applied also to those orators who composed judicial speeches or pleadings, and sold them to those who required them.

LOGOGRAPHY, n. $l\bar{o}$ - $g\check{o}g'r\check{a}$ - $f\check{i}$ [Gr. logos, a word; $graph\bar{e}$, a writing]: a method of printing in which a type represents a word instead of a letter. Logographic, a. $l\bar{o}'g\bar{o}$ - $gr\check{a}f'\check{i}k$, or Lo'gograph'ICAL, a. - \check{i} - $k\check{a}l$, pertaining to logography.

LOGOGRIPH, n. lög'ō-grĭf [Gr. logos, a word; griphos, a puzzle]: a word-puzzle in which the original word is to be discovered from various significant combinations of the letters found in it—thus, given the words tale, teal, peat, peal, pale, leap, late, find out that plate is the original word.

LOGOMACHY, n. lō-gŏm'ā-kǐ [Gr. logomachĭā—from logos, a word; machē, a fight, a contest]: contention about words; a war of words: also, a game contested by the players, in which words are composed out of the letters in a given word.

LOGOMANIA, lŏg-o-mā'nĭ-a or lō-gō-mā'nĭ-a: name sometimes given to a class of diseases of the faculty of language; including a variety of symptoms, such as forgetfulness of the word or sound properly representative of the idea, muteness, or (in contrast) rapid utterance of unmeaning words or sounds. The term is seldom used.

LOGOMETRIC, a. lŏg'ō-mĕt'rĭk [Gr. logos, a word, a ratio; metron, a measure]: denoting a scale to measure or ascertain chemical equivalents.

PLATE 3. Lodged Lombard Architecture



Lodged.



O, Pistil; S, Stamens; L, Lodicules; P, Paleæ; G, Glumes.



Palazzo Della Loggia, Brescia.



Loggia, Palace at Montepulciano.



Logwood (Hæmatoxylon campechianum).



Log-cabin,



Lombard Architecture.—The Church of San Ze..one, Verona,

LOGOS, lög'os [Gr. from lego, I speak]: Greek word, signifying the word or outward form by which the inward thought is expressed; likewise, the inward thought or reason itself (comp. Lat. ratio and oratio). It may be said to include in its meaning, the act of speaking; that which is spoken; the natural process gone through for the purpose of the formation of speech; the reasoning powers themselves:—all the attributes and operations of the soul as manifested by the spoken word. thus occurs in the classical writers under the manifold significations of word or words, conversation, oration, exposition, command, history, prose, eloquence, philosophical proposition, system, reason, thought, wisdom, and the like. These significations may be classed as pertaining to the Hellenic or metaphysical usage of the Theologically, in the Christian Church from the days of the apostles, the term Logos took a meaning essentially Hebrew, being developed from the Old Testament presentation of God as manifesting Himself to Adam, to the Patriarchs, to Moses, to David, and all the prophets, under some human personalization. covenant God, the God active in creation and present in history, He was considered as revealing Himself and exerting His power through His Word, through whose mediation also His eternal wisdom came into activity on the field of man and the world. Thus, while in Greek speculative philosophy, Logos meant Reason as the eternal force or agent which was the original of all things, to the Church of Christ inheriting the Hebrew Revelation and the Hebrew thought, it meant The Word as the eternal expression and the precise personal manifestation of God.

Theologically, the word *Logos*, as occurring at the beginning of the gospel of John, was unhesitatingly referred to Jesus Christ as God manifest in the flesh. Indeed the apostle distinctly declares this reference.

It is interesting to observe however as regards the various Oriental nations, that the notion of a certain manifestation or revelation out of the being of God—which manifestation, as a more or less personified part of the Deity, stands between the realms of the infinite and finite, of spirit and matter—has from times immemorial been the common property of the whole East. It is found expressed in the religions of the primitive Egyptians, as well as in those of the Hindus and Parsees. This personalization of Deity as 'Word' or 'Wisdom,' found its way, chiefly from the time of the Babylonian exile, into the heart of Judaism, which not readily reconciling it with the fundamental Hebrew idea of the Divine Unity, dealt with it after the manner of the apocryphal writers, who pointed chiefly to the 'Wisdom'—of which Solomon (Prov. viii. 22) says that it had dwelt with God from the beginning; and Job (xxviii. 20), that it had had its office in the work of creation.—The writers of the Apocrypha seem to have, considered

it the emanation of God, which emanation was supposed to be bodily to a certain, however minute, degree. Thus, Sirach (xxiv. 1, 23) understands the 'Spirit of God' (Gen. i. 2) to be a kind of veil or mist, and speaks (i. 1, 9) of the 'wisdom that is of the Lord and is with the Lord, everlasting,' and that 'it was created before all things, and known unto Him' (ib.).

This Wisdom, or Word of creation, which, according to Sirach's view, formed and developed the chaos, further manifested itself—visibly—by a direct and immediate influence upon one select people, Israel, through which it wished further to influence all mankind. nearer acquaintance with this doctrine in all its bearings at once solves the old riddles of certain Targumic interpretations, which have puzzled a host of investigators. Thus versions like that of Targum Jerushalmi to Gen. i. 1, 'With Wisdom God created heaven and earth,' and the constant use of the term Memra (Word) instead of God or Jehovah becomes clear at once (see TARGUM: VERSIONS). No less must many passages in the Talmud and Midrash assume an entirely different aspect when that prevalent Jewish mode of thought and speech is taken into consideration.

In the earlier Platonic schools (to turn again to the Hellenic philosophy) Logos, i.e., the Logos of God, was the common term for 'System of the Cosmos' or 'Divine Reason,' inherent in the Deity. The later Greek schools, however, more prone to symbol in philosophical matters, called Logos a 'Hypostasis of Divinity,' a substance, a divine corporeal essence as it were, which became outwardly visible—a separate Being, in fact, which, created out of the Creator, became 'the Son of the Creator.' These gropings of the ancient Pagan mind illustrate the need which human thought must always feel of some doctrine of the Logos to bridge the chasm in speculation between Creator and created, between

the Infinite and finite.

The Judæo-Alexandrine views on this point, and especially those of Philo (a Hellenized Jew, b. about B.C. 25) their best representative, have by some writers been thought to cast the most important light on the usage of the word Logos in John's gospel. This is a misapprehension which vitiates all judgment of the Johannine Logos, and no less of the Old Testament doctrine which was developed in the gospel. used by the two writers are indeed similar, for both inherited the same phraseology; but Philo's thought is essentially Pagan; his Logos is distinctively reason, not distinctly personal, not the incarnation of God, and is useful chiefly as a metaphysical term in speculation. contemplates in the Logos not reason but word—The Word, most personal, the full incarnation of God, no term in philosophy, but the Redeemer of Man. Philo's views are briefly as follows. He makes the Logos the all-comprising essence of spiritual powers (Daimons,

í

LOGOTYPE-LOGROÑO.

Angels), which alone acts upon the universe. In this sense, the Logos stands as the Divine Reason, the Power of all Powers, the Spirit of God, and His Representative, between Him and all else. This divine principle he personifies as the Archangel, who executes the behests of God to man; the Highpriest, who prays for man; in this! showing the influence of a Hebrew element; and he finally speaks of Logos as 'the second God' (De Somn. i. 655), and the 'Providence' (Fate, Fortune) which watches over the destinies of mankind and separate nations (Quod Deus, i. 298); in this showing the influence of Pagan and polytheistic thought. These conceptions, which, he says, came to him in a trance, he does not allow however, to be in the least derogatory to the strictest belief in the oneness, invisibility, and pure spiritualness of God, as taught in the Jewish creed.—This characterizes sufficiently the general vagueness and haziness of philosophical and theological parlance and speculation in the Alexandrine schools, which, obviously unconscious of the palpable contradictions uttered in one breath, mixed up pure thought and visions, Scripture with eastern and western philosophy and theosophy, monotheism and polytheism, heaping systems upon systems and dreams upon dreams.

Some Christian writers have identified the Logos of John with 'doctrine;' and a notion (held by Calvin and Luther and some others) would make it equal to monologue, the Deity in conversation with Himself. Not entering into a philosophical discussion of the great truth which the word Logos at once veils and reveals, we may quote these fitting words—'The heart of John's doctrine of the Logos is the historical fact that the Word

was made flesh.'

For the person of the Logos as the mediator (Æon, Demiurgos, etc.), and the respective relation between him and the other divine Personalizations, see GNOSTICS: TRINITY: CHRIST.

LOGOTYPE, n. lŏg'ō-tīp [Gr. logos, a word; tupos, a mark impressed, a stamp]: a type embracing a word; two or more letters cast in one piece.

LOGROÑO, lō-grōn'yo: inland province of Spain, one of the six modern provinces occupying the territory of Old Castile (see Castile): 1,945 sq. m. It is part of the basin of the river Ebro which is navigable for the whole length of the province. The Ebro is bordered by a fertile plain. Pop. (1887) 181,465; (1900) 189,376.

LOGRON'O (Lat. Julia Briga): town of Spain, cap. of the province of L., on the right bank of the Ebro, here crossed by a fine stone bridge, of date 1138; 60 m. e. of Burgos. It is surrounded by walls, has several churches, convents, a theatre, a college, some manufactures, and a good trade in rural produce, being the centre of a fertile district. Near L. 1367, Apr. 3, was fought the desperate battle between Henry, Count of Trastamara, whom the

LOGWOOD-LOIN.

people of Castile had called to the throne, and Edward the Black Prince (of England), who was in alliance to replace on the throne Pedro the Cruel. The result was that the detestable Pedro was re-enthroned.—Pop. of L. (1887) 15,667.

LOGWOOD: see under Log 1.

LOGWOOD, lŏg'wûd, or CAMPEACHY WOOD, kăm-pē'chē wûd: dark red solid heart-wood of Hamatoxylon Campechianum, a tree of nat. ord. Leguminosæ, sub-ord. Casalpinea. This tree grows in Mexico and Central America, and is perhaps a native of some W. India Islands; but is said to have been introduced into Jamaica in the beginning of the 18th c., though it is now naturalized there. The best qualities are brought from Campeachy, though only in small quantity. It is the only known species of its genus. It grows to a height of 20 -40 ft.; the leaves are pari-pinnate; the racemes many-The sapwood is flowered, and longer than the leaves. yellowish, and being worthless, is hewed off with the bark. The heart-wood is heavier than water, close-grained, but rather coarse. It has a slight smell, resembling that of violets, a sweetish taste, is astringent, and contains a distinguishing crystalline principle, called

Hæmatoxylin (see under Hæmatoxylon).

No dye-wood is exported in such large quantities as L.; nearly 70,000 tons are annually sent to Great Britain alone. It was first introduced in the reign of Queen Elizabeth, but the color was found to wash out, and the dyers not knowing how to fix it, buyers of cloths dyed with it were much dissatisfied; and an act of parliament was passed prohibiting its use. This act was repealed 1661, since which time it has been constantly in use, science having shown means for fixing. L. is exported in large billets or logs, usually about 4 ft. in length, 18 inches in diameter, and of very irregular shape; the larger they are, the greater their value; the color is a dark blood-red, becoming almost black after long expo-The infusion of the wood is also blood-red, which color it yields readily to boiling water; it is changed to light red by acids, and to dark purple by alkalies. dyeing with L., an alum mordant gives various shades of purple and violet—with the solution of tin, it gives violet, red, and lilac; with the sulphate or acetate of iron, it gives a black; but this is greatly improved in depth and softness, if, as is common, gall-nuts also are used. It is also one of the ingredients in both black and red ink; but Brazil-wood is usually preferred for the red.

LOIN, n. loyn, usually in the plu. Loins, loynz [OF. logne; F. lombes, loins—from L. lumbus, a loin: comp. Gael. luain, the loins; lion, to propagate]: the lower or hinder half of the trunk of an animal; the lower part of the back; the reins. Loin, n. loyn, the joint of an animal as cut for food, as a loin of mutton, a sirloin of beef.

LOIRE-LOIRE-INFÉRIEURE.

LOIRE, lwar (anc. Liger): longest river in France; rising in the Cevennes Mountains, near Gerbier-des-Jones, dept. of Ardèche, 4,550 ft. above sea-level, flowing n.n.w. through the centre of France as far as Orleans, where it bends to the s.w. as far as Tours, and thence follows a generally w. course to its embouchure in the Bay of Biscay; length, 626 m. It becomes navigable for small boats a little above Roanne, 450 m. from the sea. Formerly the depth at its mouth was 18 ft. at ebb-tide; now, it is only 6 to 9 ft. Ships can ascend to Nantes, 33 m.; though for half the year navigation is im-The lower course of the L. is adorned by practicable. wooded islets. In its lower part, large dikes or levées have been built, to protect the surrounding country from inundations, from which, however, it sometimes suffers terribly. It receives about 40 affluents, of which the principal are, the Loir, on the right; and the Allier, the Cher (length 98 m.), the Indre (152 m.), and the Vienne (231 m.), on the left.

LOIRE: department in the s.e. of France, formerly part of the province of Lyonnais. It comprises the arrondissements of Montbrison, Roanne, and St. Etienne; 1,178,234 English acres. The basin of the Loire, which flows through this dept., is a rather unfruitful valley, but the mountains are rich in iron and lead, and the coal-fields of the dept. are the richest in France. L. is noted for rearing of silkworms, and for the excellence of its silk manufactures. The weaving of hemp and linen is largely carried on. Its mineral springs are in great repute, especially those of St. Alban, Sail-sous-Couzan, and St. Galmier. The chief towns are St. Etienne, Roanne, Rive-de-Gier, and Montbrison.—Pop. of dept. (1881) 19,746; (1891) 31,977; (1901) 37,981.

LOIRE, HAUTE, ōt: central dept. of France, bounded s. by the depts. of Lozère and Ardèche; 1,212,160 sq. acres. The surface is mountainous; covered by the Cevennes, the Cantal Mountains, and the Margaride chain, whose slopes are clothed with forests, and whose peaks are during about half the year covered with snow. Chief rivers, the Loire and the Allier. The soil of the plains is fertile, and the agricultural product of the usual crops and fruits is abundant. The climate is very various, owing to the irregularity of the surface; the winters in most parts are long and rigorous. The arrondissements are Le-Puy, Yssengeaux, and Brioude; cap., Le-Puy.—Pop. of dept. (1891) 316,735; (1901) 314,058.

LOIRE-INFÉRIEURE, lwâr-ăng-fā-rē-ėr': maritime dept. in w. France, formed out of the s. portion of the old province of Brittany, on both sides of the river Loire, and comprising the arrondissements of Nantes, Ancenis, Paimbœuf, Châteaubriant, and Savenay, 1,697,979 English acres. In the s. of the dept. lies Grand-Lieu, largest lake in France, 27 sq. m. The interior is, on the whole, flat, but the n.e. and s.e. are slightly hilly.

LOIRET—LOJA.

The soil is fertile, producing wheat, rye, and barley, and forming in some parts rich pasturage. There are some Salt marshes are numerous in the west. fine forests. The vineyards yield annually about 32 million gallons of Ship-building is carried on extensively at Nantes. The coast-fisheries and general export trade of the dept. are extensive. Cap., Nantes; none of the other towns are large.—Pop. dept. (1891) 645,263; (1901) 664,971.

LOIRET, lwâ-rā': central dept. of France, formed out of the e. portion of the old province of Orleannois, and comprising the arrondissements of Orleans, Montargis, Gien, and Pithiviers; on both sides of the river Loire; 1,670,984 English acres. The country is, for the most part, an elevated and fruitful plain, abounding in corn and wine-known as the plateau of Orleans; but the district along both banks of the Loire, called the Sologne, is a barren, sandy tract. L. contains several large forests. Cattle, sheep, and bees are extensively reared, and mineral springs are numerous.—Pop. of dept. (1881)

368,526; (1891) 377,718; (1901) 366,660.

LOIR-ET-CHER, lwar-a-shar': department of France, on both sides of the river Loire, formed of part of the old province of Orleannois; comprising the arrondissements of Blois, Vendôme, and Romorantin; 1,568,677 sq. The dept. is almost a uniform plain, broken only by vine-hills of slight elevation. The n. part is more fertile than the s., three-fourths of which is occupied by marshes, heaths, and forests: the last indeed cover onesixth of the entire surface. The chief products are corn, fruits, hemp, wine, and vegetables of all sorts. The rearing of sheep, poultry, and bees, is carefully attended to; and there are manufactures of woolens, cottons, leather, glass, etc. Principal towns, Blois, Romorantin, and Vendôme.—Pop. (1891) 280,358; (1901) 275,538.

LOITER, v. loy'ter [O. Dut. loteren, to delay; leuteren, to linger: Świss, lottern, to joggle: Bav. lotter, a lazy or loose-living man: Fin. lotto, anything dangling: Low Ger. luddern, to be lazy]: to linger; to be slow in moving; to spend time idly; to saunter. Lor'Tering, imp.: Adj. lingering; moving slowly. Loitered, pp. -loy'-terd. Loi'terer, n. -ter-er, one who delays; an idler. Loi'teringly, ad. -li.—Syn. of 'loiter': to delay; lag; tarry; dally.

LO'JA: city of Ecuador, S. America, lat. 4° s. nine is a great article of trade, and there are cotton and woolen manufactories. The elevation is so great-the Andes being near-that products of the temperate as well as of the tropical zone are raised. Pop. 12,000.

LOJA, or Loxa, lō'châ: town of Spain, province of Granada, on the slope of a hill near the left bank of the Xenil, 31 m. w. of Granada, 41 m. n.n.e. of Malaga. L. is a thriving place, with 21 woolen factories, 3 papermills, and 2 hospitals, and was formerly of great military importance, being the key to Granada. The situation is

LOK-LOKMÂN.

very steep, consequently the streets are extremely irregular. The summit of the slope on which the town is built is crowned with the ruins of a Moorish castle.—Pop. (1887) 19,120.

LOK, n. lok, or Loki, n. loki [Icel. loki—from loka, to allure: Ger. locken, to allure: comp. Gael. lochd, evil, mischief]: in Scandinavian mythology, a demi-god, not of the race of the Aesir (see Ases), but of an older dynasty. Nevertheless he was from the very first on terms of intimacy with Odin, and received among the Aesir. His appearance is beautiful, and he has great knowledge and cunning. He often brings the new gods into difficulties, from which, however, he again extricates them. Hence he is to be regarded as the principle of strife and disturbance in the Scandinavian mythology; the 'Spirit of Evil,' mingling freely with, yet essentially opposed to, the other inhabitants of the Norse heaven, analogous to the Satan of the Book of Job. By his artful malice, he caused the death of Balder (q.v.), and was in consequence visited by the Aesir with most terrible punishments. He is sometimes called Asa-Loki, to distinguish him from Utgarda-Loki, a king of the giants, whose kingdom lies on the uttermost bounds of the earth; but these two are occasionally confounded. quite natural, considering the character of L., that at a later period he should have become identified with the Devil of Christianity, who is called in Norway, to the present day, Laake.

LOKEREN, lō'kėr-ėn: town of Belgium, province of E.Flanders, on the Durme, a small navigable stream; 11 m. e.n.e. of Ghent. It is a station on the Ghent and Antwerp railway. L. is a well-built town, with numerous schools, benevolent institutions, important manufactures of linen, cotton, and woolen goods, and large bleachtields. Pop. (1887) 19,667.

LOKMÂN, lök-mân' (Abu Aman?), a fabulous personage; the supposed author of a certain number of Arabic fables. He is by some Arabic writers called a nephew of Job or Abraham; by others a councilor of David or Solomon; but Derenbourg has almost conclusively identified him with Balaam, whose name signifies like that of L., the Devourer. Jewish tradition supports this theory; but the Jewish influence seems not to have originated but only modified the Arabic tradition. His native place and occupation are uncertain. Thus, he is variously held to have been an Ethiopian slave, conspicuous for ugliness; a king of Yemen; an Arabic tailor; a carpenter; a sliepherd; etc. Probably, the circumstances and sayings of several men living at different periods have been fathered upon L. Arabian legend distinguishes this L., known as The Sage, from an older L. said to have built the famous dike of Ma'rib. In the Koran, Mohammed (Surah 31) says of L. the Sage that to him 'has been given the Wisdom.' There is also a

LOLA MONTEZ.

great likeness to be recognized between L. and his fables and Asop and those current under the latter's name. According to the Arabic writers, to L., as the Ideal of Wisdom, the kingdom of the world was offered, but was by him declined—provided this was no offense against piety—because he felt much happier as he was; and that when asked what was the secret of the goodness and wisdom of all his deeds, he replied: 'It is this: I always adhere to the truth; I always keep my word; and I never mix myself with other people's affairs.'

The fables that go by L.'s name are for the most part Indian apologues, rendered first into Greek, thence into Syriac, finally into Arabic. They are, in this last form, of comparatively recent date, and thus unknown to all The language is very corrupt, and the classical writers. it is to be regretted that the book, in lack of anything better, still holds its rank as an elementary book for Arabic students. Its first reduction is, according to a note to a manuscript in the Imperial Library in Paris (Suppl. No. 58), due to an Egyptian Christian, Barsuma, who probably lived toward the end of the 13th c. first ed. with a Latin translation, by Erpemius, appeared at Leyden (1615). The book has been frequently translated into European languages—into French, by Tannegûy, Schier, etc.; into Spanish, by Miguel Garcia Asinto Danish, by Rask; into German, by censio, etc.; Olearius, Schaller, etc. Recent editions are by Bernstein (Gött. 1817), Caussin de Perceval (Paris 1818), Freytag (Bonn. 1823), Rödiger (Leip. 1830, etc.), Schier (Dres. 1831), Rasch (Copenh. 1832), Derenbourg (Berl. 1850), etc.

A book, Amthál (Parables), ascribed to L., and supposed to contain more than a thousand apologues, maxims, parables, sentences, etc., has never been discovered. L.'s supposed grave is shown at Ramlah, near Jerusalem, but also on the e. shore of the Lake of Tiberias, and at

Yemen, and elsewhere.

LOLA MONTEZ, lo'lâ mon'tez (Maria Dolores Por-RIS GILBERT JAMES), Countess of Landsfeldt: 1824-1861, June 30; b. Limerick, Ireland, or Montrose, Scotland, or Seville, Spain: adventuress. She was brought up in England, married Capt. James of the British army when 15 years old, accompanied him to Hindustan, and soon afterward left him and returned to England. In 1840 she appeared before the Paris public as a dancer, claiming Spanish nationality, and attracted much attention by her beauty and vivacity. She had numerous adventures in the French capital, and then went to Munich, where she appeared on the stage in the ballet and pantomime, became mistress to King Louis, gained great influence over the king and in political affairs, and was created Countess of Landsfeldt (1846) and given an allowance of \$25,000 per annum. She was responsible in a large measure for several popular outbreaks and for the revolution 1848, in which the king was forced to ab-

LOLIGO-LOLLARDS.

dicate and she was expelled from Bavaria. In 1851 she came to the United States, and for several years appeared as an actress in the large cities. Failing to make a dramatic impression in England 1857, she returned to the United States, began a series of lectures; was partially paralyzed, and retired to a sanitary retreat at Astoria, L. I., where she died. She published some light works.

LOLI'GO: see CALAMARY.

LO'LIUM: see DARNEL: RYE-GRASS.

LOLL, v. löl [Dut. lollen, to warm one's self over the coals: Icel. lall, the first imperfect walk of a child; lolla, to move or act slowly; loll, sloth]: to lounge; to give way to sloth; to rest lazily against anything; to hang out loosely, as the tongue; to thrust out, as the tongue. Lolling, imp. Lolled, pp. löld. Lollingly, ad. -ing-li, in a lolling manner.

LOLLARD, n. löl'erd [OE. loll, to wander idly about and live at the cost of others; lollere and lollaerd, a sluggard, an idle wanderer: O.Ger. lollen, to sing: mid. L. Lollardus, a Lollard: one of a sect of early reformers in Germany in the 13th and 14th centuries who went about preaching reformation of life, and having excited the indignation of the church by not joining any of the regular orders of the clergy or monks, were so called in contempt; in Eng., a follower of Wicliffe: see Lou-LARDS, THE. Note.—The origin of the term Lollard is very much disputed, but the derivation given above appears the most probable. There is also suggested a connection with L. lolium, a tare, a weed—expressive of the opinions of Churchmen—but this is a mere pun rather than an attempt to explain the word: Skeat gives the etymology O.Dut. lollaerd, a mumbler of prayers and hymns—from iullen or lollen, to sing, to hum, which nearly agrees with text. Lollardist, a pertaining to the Lollards. Lollardy, n. doctrine or ways of the Lollards.

LOLLARDS, löl'erdz, or Lollhards, löl'herdz, The [see Lollard]: name in England, at the end of the 14th and beginning of the 15th c., of the followers of John Wicliffe, representatives and promoters of a religious agitation in behalf of reform in the church, and a more spiritual type of Christian living. It was a movement which spread through various countries, gathering men of differing character—the pure and saintly, and with them the restless and fanatical, the morose and self-seeking. So far as influenced by Wicliffe, the English L. were actuated by a sincere and evangelical spirit.

The L. appear first as a semi-monastic society whose members devoted themselves to the care of the sick and the burial of the dead, in Antwerp, about 1300. They were called from their frugal life, and the poverty of their appearance, Matemans; also, from their patron saint, Brethren of Saint Alexius; and, on account of

LOLL BAZAAR.

their dwelling in cells. Fratres Cellitæ; and they acquired the name L. from their practice of singing dirges at funerals—the Low-German word lollen, or lullen, signifying to sing softly or slowly. They soon spread through the Netherlands and Germany, and in the frequent pestilences of that period, were useful, and everywhere The clergy and the begging-friars, however, disliked and persecuted them, classing them with the heretical Beghards (see Beguines), till Gregory XI. took them under his protection 1374. Female Lollard societies were formed in some places. having been reproached with heresy, their name was afterward very commonly given to different classes of religionists, sometimes to the truly pious, sometimes to the worst pretenders; and in England, it became a designation of the followers of Wieliffe (q.v.), and thus extended into Scotland, where the L. of Kyle (in Ayrshire) attracted attention, and became the objects of persecution in the end of the 15th c. The Wieliffite L., or 'poor priests,' as they were termed, were sent out by him as preaching friars, taking portions of his English translation of the Bible, and mingling with the common people all over England. Oxford Univ. upheld them, many nobles had chaplains who were Lollardist preachers, wealthy merchants supported them with money; and this, although they were proscribed by the church. In 1395 they grew so numerous that they petitioned parliament through Sir Thomas Latimer to reform the church on Lollardistic principles. petition is said to have been very plain-spoken against the Roman abuses: it alarmed the king; stronger repressive measures were taken; and the L. were never again so strong in England. In 1400 under the new king Henry IV., church and state united to crush the L., who, nothing daunted, held their ground, though some of their number were burned at the stake. The Abp. of Canterbury dealt sternly with Oxford University. Severe rules were made, forbidding any one to preach without a bishop's license, and commanding that the Lollard books and Wicliffe's translation of the Bible were to be searched for and destroyed. When at last news came to England of the burning of John Huss, the English clergy were stirred to more vigorous proceedings against Lollardism, which from that time disappeared from streets, waysides, and market-places, but continued in secret retreats throughout the kingdom. It is not entirely clear what was the influence of the L. on the English Reformation. Lollardism was a religious movement; whereas the Reformation in England was in its inception largely political—yet the L. undoubtedly prepared its way by making the Bible familiar to the people in their mother tongue.

LOLL BAZAAR, löl ba-zâr': small town of n. India. dist. of Kuch Behar, between the rivers Durlah and Tista. Massive ruins are still seen, remains of the stu-

LÖLLIPOP-LOMBARD.

pendous though rude constructions of Komotapur, a city long ago destroyed.

LOLLIPOP, n. löl'li-pöp [Bav. lallen, to suck, and papa, the infantine expression for eating: prov. Ger. pappe, anything nice to eat]: a coarse common kind of sweetmeat; sweets made of treacle, butter, and flour.

LOMARIA, n. lō-mā'rĭ-ā [Gr. loma, an edge, alluding to the marginal position of the indusia]: an interesting genus of ferns, arborescent in habit, having blackish trunks shaggy at the apex; ord. Filicēs, sub-ord. Polypodīĕæ.

LOMBARD, n. lŏm'berd or lŭm'berd: a native of Lombardy; on the European Continent, a banker or moneylender. Lombardic, a. lŏm-bârd'ĭk, pertaining to the Lombards or Lombardy. Lombardy House, lŏm'berd-ĭ, a public pawnbroking establishment. Lombard Street, in London, the chief street for banks, discount-brokers, and bullion-dealers; the money market—so named from the Lombards, who were the early bankers and inhabited that street.

LOMBARD, löm'bard, Peter (rather, Peter the LOMBARD): one of the most famous of the Schoolmen: about 1100-1160, July 20; b. at a village near Novara, Lombardy. He was a pupil of Abelard, afterward became a teacher of theology in Paris, and 1159 was appointed Bp. of Paris. Bayle says that he was the first who obtained the title Doctor of Theology in the Univ. of Paris. He died at Paris. He was very generally styled Magister Sententiarum, or Master of Sentences, from his work Sententiarum Libri IV., an arranged collection of sentences from Augustine and other Fathers, on points of Christian doctrine, with objections and replies, also collected from authors of repute. It was intended as a manual for the scholastic disputants of his age, and as may be inferred, is a compilation rather than an original work. It was the subject of many commentaries till the time of the Reformation. The works of Peter L. were edited by Aleaume (Louvain 1546).

LOMBARD ARCHITECTURE.

LOM'BARD ARCHITECTURE: style invented and used by the Gothic invaders and colonists of n. Italy, from about the time of Charlemagne till it was superseded by the importation of the pointed style from France in the beginning of the 13th c. The architecture of the Lombards was derived from the Romanesque (q.v.), or debased Roman style which they found in the country -the general plan of the churches, and the general form of the pillars, arches, etc., being almost identical with that of the Roman Basilicas (q.v.). But in detail, there is no such resemblance; the Roman traditions are entirely abandoned, and instead of the debased acanthus leaves and fragments of entablatures, characteristic of the Romanesque style, the Lombards adopted a freer imitation of natural forms in their foliage, and covered their buildings with representations of the fights and huntingexpeditions in which they delighted. On their first arrival in Italy, they employed Italian workmen; but when their own people became more numerous, they also laid aside the sword for the trowel. Accordingly, wherever in n. Italy the Lombards were numerous, their style prevailed; and where the Romans predominated, the Romanesque prevailed. N. Italy belonged naturally, at the time of Charlemagne, to the great German empire, and thus nearly the same style of architecture is found in Lombardy and in Germany as far n. as the Baltic: see RHEN-ISH ARCHITECTURE. Few early examples of L. A. remain. In the unruly times when the style originated. the buildings were no doubt frequently destroyed by fire; this seems to have led to the desire to erect fireproof structures; thus the earlier as well as almost all the later examples are vaulted with stone, whereas the Romanesque basilicas generally are roofed with wood. This stone roof seems to have been the great desideratum in the new style. The earliest example is a small chapel at Friuli, built probably during the 8th c., and it is covered with an intersecting vault. Examples of this date are rare in Italy; but in Switzerland, where the style is almost identical, several interesting specimens of early architecture remain, such as the churches of Romain-Motier, Granson, Payerne, etc., in which the transition

from the Romanesque to the round arched Gothic is very clearly traceable. We there find the poculiar arch-ornament so characteristic of Lombardy and the Rhine (fig. 1), and we can trace the timid steps by which the Goths advanced in the art of vaulting.

Fig. 1.

The vaulting is the leading feature of L. A., and from it spring the other distinguishing forms. Thus, the plain, round pillars, with a simple base and capital, which served to support the side-walls and roof of a basilica, are changed for a compound pier, made up of

LOMBARD ARCHITECTURE.

several shafts, each resting on its own base, and each provided with a capital to carry the particular part of the vaulting assigned to it. This change is deserving of particular notice as the germ of the principle afterward developed into the Gothic style (q.v.). Buttresses also are introduced for the first time, though with small projection.

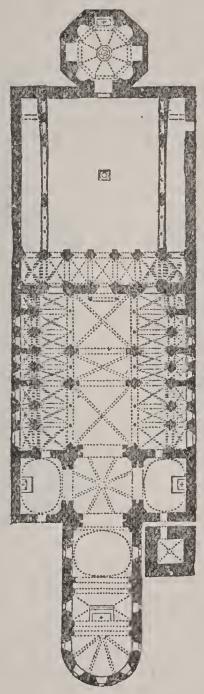


Fig. 2.

The Cathedral of Novara is one of the most striking examples of L. A. It belongs to the 11th c. The plan (fig 2) shows the arrangement common at this epoch all over the German empire. It is derived from the old basilican type, having at the w. end an open atrium, with arcade around, from which the church is entered by a central door. The interior is divided into central and side aisles, with vaulted roof, and terminated with

LOMBARDIC SCHOOL OF PAINTING.

an apsidal choir. At the end of the atrium opposite the church, is situated the baptistery. At Asti, there is an interesting example of the early Lombard baptistery. The same general arrangement of plan afterward became common in German churches, the atrium being roofed over and included in the nave, and the baptistery forming the western apse of the double-apsed churches. The elevation of Novara is ornamented with these areades and arched string-courses common in Lombard and Rhenish architecture (fig. 1.).

San Michele at Pavia, and San Ambrogio at Milan, also are good early examples of this style. In both, the grouping of the piers into vaulting shafts, wall-arch shafts, etc. (fig. 3), is complete, and that beautiful feature of the style, the arcade round the apse (fig. 4), is

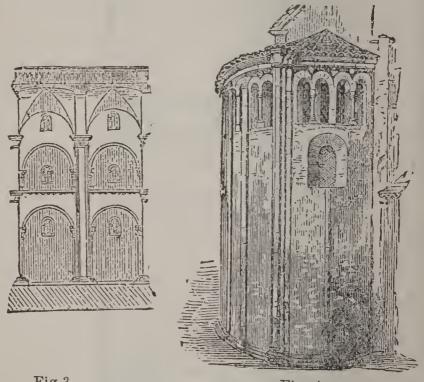


Fig 3.

Fig. 4.

fully developed. The atrium and w. front of San Ambrogio form one of the finest groups of L. A.

L. A. is important as a link between the Romanesque of Italy and the Gothic of the Cisalpine countries. one hand, its origin can be traced back to the Roman basilicas; on the other it embodied those principles from the development of which sprang the great Gothic style of the middle ages,

LOMBARDIC SCHOOL OF PAINTING: style of art characterized by grace, agreeable taste for design, without great correctness, a mellowness of pencil, and a beautiful mixture of colors. Antonio Allegri, called Correggio (q.v.), was the father and greatest ornament of this school.

LOMBARDS: German people of the Suevic family, not very numerous, but of distinguished valor, who acted an important part in the early history of Europe. The name is from Longobardi, or Langobardi, a Latinized form in use since the 12th c., and was formerly supposed to have been given with reference to the long beards of this people; but is now held to be derived from a word parta, or barte, which signifies battle-ax. About the 4th c., the L. seem to have begun to leave their original seats (on the Lower Elbe, where first the Romans probably came into contact with them about the beginning of the Christian era), and to have fought their way southward and eastward, till they came into close contact with the Eastern Roman empire on the Danube. adopted an Arian form of Christianity, and after having been tributary to the Heruli, raised themselves upon the ruins of the power of that people and of the Gepidæ, shortly after the middle of the 6th c., to be masters of Pannonia, and became one of the most wealthy and powerful nations in that part of the world. Under their king Alboin (q.v.), they invaded and conquered north and central Italy (568-9). The more complete triumph of the L. was promoted by the accession of strength which they received from other tribes following them over the Alps-Bulgarians, Sarmatians, Pannonians, Norici, Alemanni, Suevi, Gepidæ, and Saxons-for the numbers of the La themselves were never very great.

The L., after the example of the Romans themselves in the conquests of former times, were for the most part contented with a third of the land or of its fruits. One of their kings, Authari (584-590), assumed the title Flavius, which had been borne by some of the later Roman emperors, and asserted the usual claims of a Roman ruler; while the administration of the Lombard kingdom was soon so superior to that which then prevailed in other parts of Italy, that to many the change of masters was a positive relief from unjust and severe While the higher nobility, however, in general retained some portion of their former wealth and greatness, the possessors of small properties became fewer in number, and sank into the class of mere cultivators, to whom it was comparatively indifferent whether they acknowledged a Roman or a Lombard superior. The rights of the municipal corporations also, though acknowledged, were gradually abridged, through the encroachments partly of the Lombard dukes, partly of the higher clergy, till few relics of their ancient self-government remained. These few, however, were the germs from which, at a subsequent period, the liberties of the independent Italian cities were developed.

The conversion of the Arian L. to the orthodox faith was brought about by the policy of Gregory the Great and the zeal of Theodolinda, wife of Authari, and sub-

sequently of his successor, Agilulf (590-615).

Theodolinda persuaded Agilulf to restore a portion of

LOMBARDS.

their property and dignities to the Rom. Catholic clergy, and to have his own son baptized according to the Rom. Uatholic rites. She also built the magnificent Basilica of St. John the Baptist at Monza, near Milan, in which in subsequent times was kept the Lombard crown, called the Iron Crown (q.v.). The L. were erelong fully united to the Rom. Cath. Church. The contests of the dukes prevented the firm consolidation of the kingdom, or any great extension of its boundaries. The Edict of the Lombard king, Rothari (638-654), declaring the laws of the L., 643, Nov. 22, is inemorable, as having become the foundation of constitutional law in the Germanic kingdoms of the middle ages. It was revised and extended by subsequent Lombard kings, but subsisted in force for several centuries after the Lombard kingdom had passed The L., however, gradually became more and more assimilated to the former inhabitants of the land of which they had made themselves lords; their rudeness was exchanged for refinement, and the Latin language prevailed over the German, which they had brought from the other side of the Alps. But of the original Lombard language little is known, nothing remaining to attest its certainly German character except a few words and names, the very ballads in which the stories of Lombard heroes were recorded having come down to us in

Latin versions only.

Liutprand (713-744), raised the Lombard kingdom to its highest prosperity. He quelled with strong hand the turbulence of the nobles, gave the finishing blow to the exarchate of Ravenna, and sought to extend his dominion over all Italy. But the popes now entered on that Macchiavellian policy which they long incessantly pursued, of preventing a union of all Italy under one government, thus securing for themselves the greater power in the midst of contending parties. This, with the disputes concerning the succession to the Lombard throne, led to the downfall of the Lombard kingdom not long after it had reached its utmost greatness. allied themselves with the Frankish kings; and Pepin, who had been anointed by Stephen II. to the 'patriciate, i.e., the governorship of Rome, invaded Italy (754), and compelled the Lombard king Aistulf (749-754), who cherished the same ambitious designs as Liutprand, to refrain from further conquests, and even to give up some of the cities which had already yielded to his arms, which Pepin (755) bestowed on the Roman Church and commonwealth. New causes of hostility between the Frank and Lombard monarchs arose when Charlemagne sent back to her father his wife, daughter of the Lombard king Desiderius (754-774), and Desiderius supported the claims of the children of Carloman, Charlemagne's brother. autumn of 773, Charlemagne invaded Italy; and in May of the following year, Pavia was conquered, and the Lombard kingdom, after an existence of 206 years, was overthrown. In 776, an insurrection of some of the Lom-

LOMBARDY.

bard dukes brought Charlemagne again into Italy, and the dukedoms were broken down into counties, and the Lombard system, as far as possible, supplanted by that of the Franks. In 803, a treaty between Charlemagne, the western, and Nicephorus, the eastern emperor, confirmed the right of the former to the Lombard territory, with Rome, the Exarchate, Ravenna, Istria, and part of Dalmatia; while the E. empire retained the islands of Venice and the maritime towns of Dalmatia, with Naples, Sicily, and part of Calabria. Compare Türk's Die Longobarden (1835); works by Flegler (1851); Bluhme (1874); and Martens (1880); and on the language by Meyer (1877).

LOM'BARDY: that part of Upper Italy which formed the 'nucleus' of the kingdom of the Lombards (q.v.). It consisted of the whole of Italy n. of the peninsula, with the exceptions of Savoy and Venice, and after the fall of the Lombard kingdom, 774, was incorporated in the Carlovingian empire. In 843, it was created a separate kingdom, but was not entirely severed from the Frankish monarchy till 888. From this time it was ruled by its own kings till 961, when it was annexed to the German empire. Out of the wrecks of the old independent kingdom of L. then arose a number of independent duchies, as Friuli, Mantua, Susa, Piedmont, etc., and soon afterward the republics of Venice, Genoa, Milan, and Pavia. These republics consisted of one sovereign town, surrounded in many cases by a large dependent territory. The Lombard cities declared themselves independent toward the commencement of the 12th c., and in 1167 were joined by their less powerful neighbors in the 'first Lombard league,' for the maintenance of their liberties, against Frederic Barbarossa, whom they severely defeated 1176. In 1225, they were compelled to form the 'second Lombard league' against Frederic II., and with similar success. About this time, petty tyrants arose in most of the cities, and the country was distracted by internal dissensions, carefully fostered by France and Germany. These two great powers and Spain strove for the possession of L.; and Spain obtained it 1540, and held possession of L., and Spain obtained to to, the held possession till about 1706, when after another dispute, the duchies of Milan and Mantua (the country bounded by the Ticino, Po, Mincio, and Switzerland), which alone now retained the name of L., came into the hands of Austria, and were designated 'Austrian Lombardy.' In 1796, it became part of the Cisalpine republic, but in 1815 was restored to Austria, and annexed politically to the newly-acquired Venetian territory under the name Lombardo-Venetian Kingdom. This union was dissolved 1859 by the Italian war; L. was given up to the new kingdom of Italy, Austria, however, retaining, for a time, her Venetian territory. L. is now a 'compartimento' of the kingdom of Italy, comprising the administrative provinces of Bergamo, Brescia, Como, Cremona, Milan, Pavia, and Sondrio. Total area, about 9,050 sq. miles.

LOMBOK-LOMONOSOFF.

The n. districts of L. are alpine in character, but the rest of the country is of extraordinary fertility, chiefly from universal irrigation. The country is celebrated for the products of its pasture-land, and as much as 50,000,000 lbs. of cheese is annually produced in the dairies. Agriculture is more advanced than in any other part of Italy, wheat, rice, and maize being principal crops: melons, gourds, oranges, figs, citrons, pomegranates, peaches, plums, and other fruits of excellent quality, are largely produced. The numerous mulberry plantations are a prominent feature, and vines are extensively cultivated, though the wine produced is of inferior quality. Various kinds of marble, some of great beauty, are worked; and there are a few iron mines. The chief manufactures are silk, cotton, and woolen goods, flax, paper, glass, and pottery; the annual value of the silk exceeds \$15,000,000. In 1882 L. suffered terribly from floods.—Pop. (1891) 3,923,111; (1901) 4,282,728.

LOMBOK, lŏm-bŏk': island in that crescent group in the Malayan archipelago known as Sunda Islands. It is between Bali and Sumbawa; area estimated 1,480 sq. m. The people are Mohammedans. The n. and s. coasts are each traversed by a chain of mountains, some of which are volcanic, but the interior is a fertile valley. Rice and cotton are largely cultivated. Cap., Mataram; principal seaport, Ampanam.—Pop. of island 200,000.

LOMENT, n. $l\bar{o}'m\bar{e}nt$, or Lomentum, n. $l\bar{o}$ - $m\bar{e}n't\bar{u}m$ [L. lomentum, bean-meal]: in bot., a legume or pod with transverse partitions, each division containing one seed. Lomentaceous, a. $l\bar{o}'m\bar{e}n$ - $t\bar{u}'sh\bar{u}s$, furnished with a loment; bearing loments: see Legume.

LOMOND, Loch, löch lörmond: largest of Scottish lakes: between Dumbartonshire on the w., and the counties of Stirling and Perth on the east; 24 m. long, 7 m. broad at the s. extremity, though then. half is only about one m. in width; area 45 sq. m. Its depth varies from 60 to 600 ft., and its surface is only about 22 ft. above sea-level. The waters of the loch are swelled by many streams, chief of which is the Endrick, from the s.e.; the surplus waters are carried off by the Leven, affluent of the Clyde. The lower portion of the loch is surrounded by a hilly but well-cultivated and finely wooded country, and the scenery is rich and beautiful. Around the n. portion of the loch are piled high, wild, and picturesque masses of mountains—Ben Lomond on the e., the Arrochar hills on the west. The surface is dotted with islands, finely diversified in general appearance, and contributing greatly to the exquisite beauty of the scene. Several steamers ply on the lake.

LOMONOSOFF, lom-o-nō'sof, MIKHAIL VASILIEVICH: Russian poet, philologist, chemist, and statesman: 1711-65; b. in the village of Denisovka (now named L. in honor of the poet), in the govt. of Archangel, Russia; son of a poor fisherman. The few books accessible L.

LOMZA-LONDON.

learned by heart. At 17 years of age by the help of friends who had noticed his hunger for knowledge, he was placed in school at Moscow. L. rose to be one of the most learned men in Europe, and became prof. (ultimately rector) in the Univ. of St. Petersburg; and in the last year of his life, sec. of state. His Russian grammar is said 'to have drawn out the plan, and his poetry to have built up the fabric of his native language.' He is called the 'father of Russian literature.'

LOMZA, or Lomzha, lōm'zha: government of Russian Poland, near the Prussian boundary; 4,670 sq. m., nearly one-tenth of all Poland. The bulk of the pop. is Polish, and Rom. Cath. in religion. The prevalent industry is agriculture. Pop. (1889) 608,683; (1897) 585,781.

LOMZA, or Lomzha: district town in the govt. of L., in Poland, 85 m. n.e. of Warsaw, prominent in the history of Poland. It has never recovered from its sufferings during the Swedish wars. It is an ancient town, having one church dating before A.D. 1000. L. has some manufactures. Pop. (1890) 18,405; (1897) 26,075.

LONCHOPTERIS, n. lŏng-kŏp'ter-ĭs [Gr. longchē, a spear; pteris, a fern]: in geol., a fossil fern-like frond, occurring in the Coal Measures, having leaves many times pinnate.

LON'DON: chief city of the county of Middlesex, Ontario, Canada; at the junction of the two branches of the Thames, about 114 m. w.s.w. from Toronto. The site was laid out 1825. When the city was called L., the river, which had formerly been known by an Indian name, received the name Thames; a Westminster and a Blackfriars Bridge were thrown over it; and names from the streets of London, Eng., were given to the principal streets. There are several fine buildings. Medicinal sulphur springs attract many visitors. By the Thames L. has communication by water (as yet incomplete) with the lakes; and it has already adequate railway outlet. The centre of a rich agricultural district, L. carries on large trade in the produce of the country; there are many foundries, tanneries, breweries; printing-offices issuing three daily and several weekly newspapers; and, outside the city, large petroleum refineries. Among the educational institutions are, Huron College, Hellmuth College, and Hellmuth Ladies' College, Acad. of the Sacred Heart, and the new Western University. Pop. (1881) 19,746, (1891) 31,977; (1901) 37,981.

LONDON, lăn'dăn: metropolis of England, and capital of the British empire: on both banks of the Thames (here 900 to 1,200 ft. in width), about 50 m. from its mouth. The dome of St. Paul's is in lat. 51° 30′ 48″ n., and in long. 5′ 48″ w. Pop. (1350) 90,000; (1600) 180,000; (1650) 350,000; (1700) 550.000; (1801) 864,035; (1841) 1,872,365; (1891) Greater London, 5,633,806; (1901) the sâme, 6,581,372. See below.

L. seems to have been the capital of an ancient Brit-

LONDON.

ish tribe. Under the names Londinium, Londinum, and Augusta, it was one of the chief stations of the Romans in Britain. They encircled a portion of what is now the City with a wall, which was rebuilt and extended in later ages. In Stow's time, the remains of the Norman or Anglo-Norman wall were about two miles in extent, from the Thames at the Tower round to the Thames at Blackfriars: it is now nearly obliterated. L. was an important place in Anglo-Saxon times, was plundered and burnt by the Danes in the 9th c., and was prominent in the submission by the kingdom to William the Conqueror. Since that time it has been practically the metropolis, and its history is interwoven with that of the nation. Important dates are: foundation of the bishop-1 ic 604, building of the Tower 1078, great plague 1665, great fire 1666. In the civil wars the Londoners took the

side of parliament.

It is almost impossible to say what is the size of L., because there is no boundary wall, nor any definite number of surrounding villages and parishes included within it. 'London within the walls,' the original City, comprises only 370 acres; 'London without the walls' comprises 230 acres; then there are the city of Westminster and the borough of Southwark; the 'Tower Hamlets,' comprising Bethnal Green, Whitechapel, Stepney, Mile End, Poplar, Blackwall, etc.; the northern suburbs of Marylebone, Portland Town, Camden and Kentish Towns, St. Paneras, Hampstead, Islington, Dalston, Clapton, Hackney, etc.; the western suburbs of Kensington, Chelsea, Pimlico, Tyburnia, Notting Hill, Bayswater, Westbourne, Fulham, Paddington, etc.; many parishes in the centre, but westward of the City; Bermondsey, Lambeth, Newington, Wandsworth, Kennington, Stockwell, Brixton, Clapham, Camberwell, Peckham, Rotherhithe, etc., in Surrey; and Deptford, Greenwich, Penge, Hatcham, Blackheath, Lewisham, Lee, etc., in Kent. The Post-office L. is larger than the Parliamentary L.; and the Police L. is larger than either. It is usual, however, now to take, as the limit of L., the area under the operation of the 'Metropolis Local Government Act,' which is adopted also by the registrar-general for the census, and for the tables of mortality; it is nearly identical with the area under the control of the Metropolitan Board of Works, and with that under the control of the London School Board (established by the Education Act of 1870). The area of the metropolis thus defined is about 78,200 acres, equal to 122 sq. m. This area contained (1861) 359,421 inhabited houses, 2,803,-044 inhabitants; (1871) 417,767 houses, 3,266,987 inhabitants; (1881) 486,286 inhabited houses, 3,816,483 inhabitants. More than one-fourth of the total urban population, and nearly one-seventh of the total population of England and Wales are concentrated in the metropolis. The limits of the metropolis were defined by the registrar-general, in the census returns of 1891, as consisting of an 'inner ring' and an 'outer ring,' the former subdivided into a

LONDON.

'central area' and 'rest of inner ring.' The following table gives the results of the censuses in 1881 and 1891:

Divisions of the Metropolis.	Populations.		Rates of increase (+) or	
	1881.	1891.	decrease (-) per cent. 1881-91.	
Central area	1,101,994 2,713,550	1,022,529 3,188,527		
Inner or registration London 'Outer ring'	3,815,544 951,117	4,211,056 1,422,276	+ 17·3 + 10·4 + 50·5 + 49·5	
'Greater London'	4,766,661	5,633,332	+22.7 + 18.2	

The population of registration London 1901, March 29, was 4,536,541: of what is known as the 'outer ring,' 2,044,831—total for Greater London, 6,581,372. The estimate of the registrar-gen. in 1902 for the whole area was 6,705,731.

The night population of the City of London in 1891 was 37,694 (50,652 in 1881); the day population in 1891 was 301,384; in 1881 it was 261,061.

\$77°/3 • O 3 75	Area in	Population.	
Within Stated Boundaries.	acres.	1891.	1896.
Registral-general's tables of mortality	74,672	4,211,743	4,411,710
Limits of the county of London	75,442	4.232,118	4,433,018
London school-board district	75,442	4,232,118	4,433,018
City of L., municipal and parliamentary limits	671 269,140	37,705 5,260,680	31,148
City)	74,771	4,194,413	4,401,870
Metropolitan boroughs (including the City)	75,442	4,232,118	4,433,018
the City)	442,750 443,421	5,596,101 5,633,806	*

* Not shown in the census.

The metropolitan police district extends over a radius of 15 m. from Charing Cross, exclusive of the City of L., with a ratable value (1896) of £38,716,378. The number of new houses built since 1849 up to 1896 (Jan.) is 598,192, with 4007 in course of erection.

In round numbers, the dimensions are about 13 m. e. to w., and 9½ m. n. to s. For parliamentary purposes, under the Distribution of Seats Act (1885), L. is divided into 28 boroughs, returning one to seven members (Tower Hamlets) apiece—in all, 60 members. For poorlaw purposes, L. is divided into 40 unions, in some cases single parishes, in others groups of parishes. The 'Metropolitan Buildings Act' of 1855—which gives some kind of official control over the ranging of houses in streets, the removal of projections and sheds, the management of rebuilding and repairs, the compulsory repair of houses in a dangerous condition, etc.—divides the metropolis into 56 districts, of which 4 are in the

LONDON.

city of L., 5 in the city of Westminster, 30 in other parts of the metropolis n. of the Thames, and 17 s. of the Thames. The City of L. is rapidly decreasing in population, owing to the substitution of large commercial establishments for dwelling-houses.

The Thames at L. is crossed by the following bridges: London Bridge, South-eastern railway City Bridge, Southwark Bridge, Chatham and Dover railway Bridge, Blackfriars Bridge, Waterloo Bridge, Charing Cross railway and foot Bridge, Westminster Bridge, Lambeth Bridge, Vauxhall Bridge, Pimlico railway Bridge, Chelsea Suspension Bridge, Cadogan or Albert Bridge, Battersea Eridge, West London railway Bridge, Putney Bridge, and Hammersmith Bridge. (The bridges at Barnes, Kew, and Richmond can scarcely be said to be within metropolitan limits.) Near and between these bridges are about 20 steamboat piers, for river passengers. The Thames Tunnel, formerly a footway under the river, 1,200 ft. long, about two m. below London Bridge, now constitutes part of the East London railway. A little way below London Bridge is the Tower Subway, a small tunnel for foot passengers. For the accommodation of such shipping as cannot conveniently load and unload in the river, St. Katharine's Docks, London Docks, Limehouse Docks, West and East India Docks, Victoria Docks, and Tilbury Docks (in progress), are on the n. shore; and the Commercial and Grand Surrey Docks on the s. shore. The part of the Thames just below London Bridge. called the Pool, is the great rendezvous for coal-ships: below that, as far as Blackwall, is the Port, occupied by ships of greater burden. Of canals, the Paddington, Regent's and Grand Surrey are the chief.

L. is under very varied governmental jurisdiction, The lord mayor and corporation exercise peculiar powers in the City, in reference to tolls, dues, markets, administration of justice, police, drainage, lighting, paving, and a variety of other matters. The City is divided into 25 wards, each represented by an alderman; the aldermen are chosen for life, and are magistrates by virtue of their office. The Common Council consists of 206 members, who, with the lord mayor and aldermen, form a kind of parliament for the management of City affairs. The Mansion House and Guildhall are the chief buildings for the transaction of corporate business. Metropolitan Commissioners of Police, and the Metropolitan Board of Works, have control over the whole metropolis except the City. Westminster and Southwark are each under local authorities, but only in minor matters. The drainage is managed by two Boards of Works, one for the City, and one for the rest of the metropolis, and has been improved by a vast and costly system of sewerage, paid for by the householders. Nearly all the drainage and sewage enter the Thames at points 12 m. below London Bridge; the expense of these great works has reached nearly £5,000,000. The gas supply is in the hands of joint-stock companies; and so is the water supply: the water being obtained from the Thames, and from the New river, one of its affluents. Both systems are in some degree controlled by the boards, etc., above named. In police jurisdiction, the City of L. is entirely distinct from the rest of the metropolis. In 1863, an attempt was made by the government to bring all under one jurisdiction; but the opposition of the citizens was so strong, that the attempt failed. The City police, about 850 in number, are in six divisions, and have seven stations; there are two police-offices or justice-rooms, one at the Mansion House, and one at Guildhall. the rest of the metropolis is under the Commissioners of Metropolitan Police, with headquarters at Whitehall. There are 21 divisions, all but one (the Thames Police) denoted by letters of the alphabet; the full force, officers and men, is about 11,000. There are 14 police courts, attended by 23 police magistrates, for taking cognizance of offenses within the metropolis, but outside the City.

The streets of L., extending, with lanes and courts, nearly 30,000 m. in aggregate length, depend mainly for their direction on the course of the Thames; the principal of them being nearly e. and w. One route extends from Hammersmith to Mile End and Bow, through Piccadilly, Strand, and Cheapside; another, beginning in the Uxbridge Road, passes through Oxford St. and Holborn, and joins the former at Cheapside. There is still a deficiency of wide thoroughfares for the City traffic. The Northern or Victoria Thames Embankment forms a wide and handsome avenue from Westminster Abbey to the heart of the City. A recent thoroughfare, Northumberland Avenue, runs from the Strand to the Thames Embankment. In its construction Northumberland House was pulled down, at an expense of about £650,000. L. was formerly deficient in wide streets running n. and s., but the opening of Charing Cross Road and Shaftesbury Avenue has greatly improved communication. Regent St. and the Quadrant form the finest street in L., for general effect; but the most palatial street is Pall Mall, owing to the number of club-houses there, most of which are fine buildings. Of the 50 or 60 principal club-houses, the Army and Navy, Guards', University, Carlton, Reform, Travellers', Athenœum, United Service, and United University, are in Pall Mall. A continuous range of fine shops extends from Pall Mall to Cornhill.

Among the buildings belonging to the crown or to the nation, the following are principal: St. James's Palace, irregular and inelegant cluster of buildings, used for court purposes, but not as the Queen's residence. Buckingham Palace, the Queen's London residence, a large but low quadrangular mass, with very inadequate court accommodation. Marlborough House, residence of the Prince and Princess of Wales. Kensington Palace, occupied partly by royalty, partly by recipients of court favor. Houses of Parliament, a vast structure, which has cost £3,000,000; perhaps the finest, certainly the largest, Gothic building in the world applied to civil purposes;

the river-front is 900 ft. long. Westminster Hall, a noble old structure, of which the main hall is 290 ft. by 68, and 110 high. Somerset House, a quadrangular structure with a river-frontage 600 ft.; it is occupied mostly by govern-The Admiralty, noticeable chiefly for the ment offices. screen in front of the courtyard. The Horse Guards, official residence of the commander-in-chief, with an arched entrance to St. James's Park. The Treasury, the Home Office, the Privy Council Office, and the Board of Trade, occupy a cluster of buildings in Whitehall. The Foreign and India Offices form a noble new group near Whitehall; and the Colonial and other offices have been built immediately adjacent. The War Office, in Pall Mall, a large but plain brick building. The British Museum (g.v.). The National Gallery, devoted to a portion of the national pictures, in Trafalgar Square. The Museum of Economic Geology, in Jermyn Street, a small but wellplanned building. Burlington House, appropriated by the nation to the Royal Academy and to several scientific The South Kensington Museum, a remarkable medley of buildings; and the new Natural History Museum adjoining. The Palace of Justice, Strand. Guards' Barracks, Chelsea. The Custom-house, with a long room 190 ft. by 66, is finely situated on the river-side. The General Post-office, a noble mass in St. Martin's-le-Grand, has a central hall 80 ft. by 60, and 53 high, with a vast number of offices all around it; and a large new block of buildings just opposite, finished 1873. The Mint, on Tower Hill, a cluster of buildings in which the gold and silver coinage is managed (a new structure near the Thames Embankment, is in contemplation). The Tower of London a confused mass of houses, towers, forts, batteries, ramparts, barracks, armories, storehouses, and other buildings, included within a boundary of about 900 ft. by 800, at the extreme verge of the City. L. is the seat of a bishopric, which comprises about

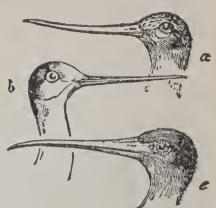
320 benefices. The income of the bishop is £10,000 a year. St. Paul's, the cathedral for the diocese, is at the e. end of Ludgate Hill, extending to Cheapside, and was built by Sir Christopher Wren (1675-1710) at a cost of £748,000. It is in the form of a cross, 514 ft. long, by 286 wide; the cross, which surmounts the ball over the dome, is 356 ft. above the marble pavement below. St. Paul's contains many monuments to illustrious per-(Plans are in progress for an extensive and costly restoration of the interior.) Westminster Abbey, also cruciform, is 530 ft. in extreme outer length, by 203 in width; the w. towers are 225 ft. high. Henry VII.'s chapel at the e. end, is a beautiful example of enriched The abbey has no special connection with the see of London, but is intimately connected with some of the court and parliamentary ceremonials. It was originally a Benedictine monastery, and is said to have been founded by Sebert, King of the E. Saxons (about 616); enlarged by King Edgar and Edward the Confessor; and



Loment of Sainfoin.



Long-bow.



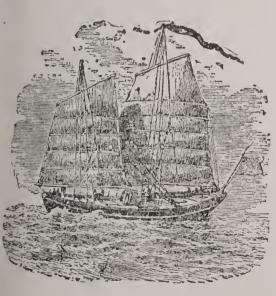
Longirostres.—a, Head of Blacktailed Godwit; b, Do. Stilt Plover; e, Do. Glossy Ibis.



Loopers.—Butterfly and Caterpillar of *Abraxas grossulariata*, the Magpie Moth.



Lophobranchii.—1, Pipe-fish (Syngnathus acus); 2, Head, with the operculum removed to show the tufted branchiæ, a.



Lorcha.



Purple-capped Lory (Lorius domicellus).

rebuilt, nearly as we now see it, by Henry III. and Edward I. Here most of the British sovereigns have been crowned; and here many of them have been buried. The Poet's Corner, with its tombs and monuments of eminent men, is a well-known spot of the abbey. St. Saviour's, in Southwark, is the third in importance of the L. churches. The largest Rom. Cath. church is in St. George's Fields. The largest dissenting chapel is the Baptist Tabernacle, Newington Butts, of which the late Charles H. Spurgeon was at one time pastor. There are over one thousand places of worship, of which those belonging to the Church of England are rather less than one half; religious denominations are about 30 in number.

Of schools of all kinds, there are about 2,000, including Private, Parochial, Ragged, Church and Chapel, National, British, Free, Grammar, and Ratepayers' Board schools. Many small and inefficient private schools have lately been closed as a consequence of the opening of good public schools. The chief educational establishments are London University, King's College, University College, Gordon College, Regent's Park College, New College, Wesleyan College, Hackney College, Training Colleges belonging to the National, British and Foreign, and Home and Colonial School Societies, Westminster School, St. Paul's School, Christ's Hospital or the Blue-coat School, the Gray and Green Coat Schools, Merchant Taylors' School, Mercers' Grammar School, City of London School, Queen's College, and other colleges for women. The new schools built by the London School Board, are large and handsome.

There are about 70 alms-houses. The societies, associations, and institutions more or less permanent, maintained for other than money-making objects, are not less than 600 in number. Of the hospitals, the chief are Guy's, St. Thomas's, the London, the Poplar, the Westminster, the Charing Cross, St. George's, St. Mary's, Middlesex, King's College, University College, Great Northern, the Small-pox, the Fever, the Consumption, the Lock, and the Royal Free Hospitals. St. Thomas's Hospital, a magnificent pile, has lately been rebuilt on the Albert or Southern Thames Embankment, opposite the houses of parliament. St. Luke's and Bethlehem (for insane persons), and the Foundling Hospital, are special in their objects. Of the 600 institutions above alluded to, about 200 are hospitals, dispensaries, infirmaries, and asylums; while the remaining 400 are religious, visiting, or benevolent institutions.

There are law-courts, civil and criminal, of all degrees of dignity, and with various extent of jurisdiction. For some of the more important, more worthy buildings have been erected near the Strand. There are 7 sessions-houses (Old Bailey, Guildhall, Tower Hamlets, Southwark, Kensington, Clerkenwell, and Westminster) The prisons have undergone many changes within a few years, partly owing to the decay of old buildings,

and partly to changes in the law of imprisonment. At present the buildings actually used as prisons are about a dozen in number, the chief being Holloway, Pentonville, Cold Bath Fields, Milbank, Clerkenwell, Brixton, Fulham, and Wandsworth; Newgate is now used only for the reception of prisoners for trial at the Central Criminal Court. The chief law buildings are the magnificent new law courts or Palace of Justice in the Strand (opened 1882, superseding the Westminster Hall Courts of Law and Equity, and the Lincoln's Inn Courts of Equity, etc.), and with Chancery, Queen's Bench, and other divisions of the High Court of Justice; Guildhall Courts; the Central Criminal Court in the Old Bailey: ecclesiastical and other special courts at Doctors' Commons, etc. The Inns of Court (q.v.) are in some sense colleges for practitioners in the law; they comprise the Inner Temple, the Middle Temple, Lincoln's Inn, and Gray's Inn: the dependent nine Inns of Chancery have been sold, or are simply chambers to let. Connected incidentally with legal matters is the Record Office, a large depository for official papers in Fetter Lane. The legal practitioners in L., besides judges, etc., comprise about 4,000 solicitors and attorneys, and 2,000 barristers.

In connection with the shipping of L., and the import and export trade, the Docks above named contain more than 400 acres of water space, and large warehouse, shed, and vault accommodation—besides warehouses in various parts of the city, away from the docks: 6,000 to 7,000 ships enter these docks annually. Nearly all the sailing-vessels which come laden with coal, instead of entering docks to unload their cargoes, lie in the stream of the river, and transfer their coal to lighters, which convey it to the yards of coal-merchants on the banks of the river itself or of the canals which run into it. One-fourth of the whole ship tonnage of England, and one-half of the large steamers, belong to London. the ships that enter the port of L., about 60 per cent. are in the foreign and colonial trade, about 40 per cent. in the coasting trade. About 100 vessels enter the port every day, four-fifths British, the rest foreign. The value of all the merchandise exported from the port is nearly one-fourth of that of the exports for the whole United Kingdom. The imports of wheat, flour, cotton, dye-stuffs, palm-oil, and some other articles, are greater into Liverpool than into L.; but L. leads in imports of colonial produce, wines, and spirits. L. receives about half of the total customs revenue of the kingdom, owing to the fact that duty-paying commodities constitute so large a proportion of its aggregate imports.

The principal markets are the Cattle Market at Pentonville, Covent Garden (vegetable) Market, Billingsgate (fish) Market, and Smithfield (meat and poultry) Market. The Columbia Market, Bethnal Green, presented to the corporation of the City by Baroness Burdett Coutts, has not met the anticipated want. In Bermondsey is a com-

mercial Hide and Skin Market. The establishments for wholesale dealings are stupendous; of coal alone, 1. now requires more than 6,000,000 tons annually. The whole number of distinct trades or occupations is about 2,000. There are about 80 Trade Guilds or City Companies, many of which possess large revenues; but they now exert little influence on the actual course of trade and manufactures; the chief among them, called the Twelve Great Companies, are the Mercers', Grocers', Drapers', Fishmongers', Goldsmiths', Skinners', Merchant Taylors', Haberdashers', Salters', Ironmongers', Vintners', and Clothworkers' Companies, all of which have Halls, in which banquets are held. The Goldsmiths', Apothecaries', and Stationers' Companies still excreise some active control over those trades. The banks, either private or joint-stock, are more than 100 in number, many of which have two or more banking-houses. There are about as many insurance offices; some for life only, some for fire only, some for life and fire. The buildings for these banks and insurance offices are among the best in London. The Bank of England, one of Sir John Soane's most successful buildings, gives employment to about 1,000 clerks, etc. Of exchanges, are the Royal Exchange, noticeable chiefly for Sir R. Westmacott's sculpture in the pediment, the Corn Exchange, the Coal Exchange, the Hop and Malt Exchange, and the Stock Exchange near the Bank, nearly hidden from view. The great warehouses for foreign and colonial produce lie chiefly castward of the city; while the wholesale establishments for textile goods occupy enormous buildings in the neighborhood of Cheapside and St. Paul's Churchyard. Most of the large manufacturing establishments lie either eastward or southward, the centre and west being engaged in selling rather than in making. In various parts of L. large clusters of excellently arranged dwellings and lodging-houses for working people have been erceted.

The passenger and goods traffic in L. requires vast resources. There are 11 railway companies, having the termini of their lines in L., besides minor lines, more or less under the control of those companies. In addition to about 20 large passenger stations, there are at least 200 smaller within the limits of the metropolis. There is one railway n. and s. through the heart of L., and four extending e. and w. nearly through it. The vastness of the local traffic is illustrated by the fact that the Metropolitan and Metropolitan District railways, working in concert, dispatch about 500 trains per day, and accommodate about 30 stations, all within the limits of the metropolis, and all n. of the Thames. There are about 140 booking-offices connected with inns, having relation to passenger and carrier traffic. For water-traffic, there are about 50 wharves and quays on the Thames, besides a considerable number on the Regent's and other canals. There are about 1,700 omnibuses and 6,000 cabs. It has been ascertained that, on an average day, 1,000 vehicles

per hour pass through Cheapside; and on an average day of 24 hours, 170,000 persons and 20,000 vehicles have been counted crossing London Bridge. A great length of

street tramway has been laid in L. and the suburbs.

Of the open places in the metropolis, the Parks are most important. Hyde Park, St. James's Park, the Green Park, Regent's Park, Victoria Park, Kensington Park, Finsbury Park, Southwark Park, Kennington Park, and Battersea Park, all belong to the nation, and are reserved from the buildens' bender the second se from the builders' hands; they are necessary as 'lungs' to London. Primrose Hill and Hampstead Heath may be included in the number. The Zoological Gardens, Horti-cultural Gardens, and Botanic Gardens are beautiful places, belonging to private societies. The Cemeteries, substitutes for the old churchyards, are at Highgate, Finchley, Stoke Newington, Mile End, Kensal Green, Bethnal Green, Brompton, Nunhead, Colney Hatch, Camberwell, Norwood, etc. Of places of amusement, there are 3 opera-houses, about 40 theatres, 12 musichalls and concert rooms of large dimensions (including Albert Hall), a much larger number of less size, and very numerous exhibition-rooms of various kinds; of which the Annual International Exhibitions building at South Kensington was opened 1871. Of public columns and statues in open places, L. contains about 80, many of them not remarkable for beauty. The chief are: The Albert Memorial, Hyde Park; the Monument, Fish Street Hill; Nelson Column, Trafalgar Square; Wellington Statue, Hyde Park; Achilles Statue, Hyde Park; Guards' Memorial, Pall Mall; Crimean Monument, Westminster; York Column, Waterloo Steps; Havelock's and Napier's and Gordon's statues, Trafalgar Square; Outram's statue and Cleopatra's Needle on the Thames Embankment, etc. Of numerous drinking fountains, the finest was presented to Victoria Park by Baroness Burdett Coutts. There are many cheap public baths and wash-houses.

L. is not supplied with hotels adequate to its size; and importance. The best of those belonging to the railway companies are the Great Northern, the Midland, the Victoria and Euston, the Great Western, the Grosvenor, the Charing Cross, and the Cannon Street. Of the others, the Langham, the Grand Hotel, the Savoy, First Avenue, Metropole, Cecil, and the Imperial are imposing edifices.

See further, Westminster: Tower of London: London University: British Museum: Kensington (S.) Museum: St. Paul's Cathedral: Mint: Exchange: Billingsgate: Covent Garden: Club: Christ's Hospital: Charterhouse: Guild: Guildhall: Temple: Livery: Works (Board of): Sydenham: etc.

LONDON, CUSTOM OF, in English Law: peculiar in several respects, in which the laws there differ from the rest of the country. Thus, in the City proper, a law of foreign attachment exists, like the Scotch law of arrestment, by which a creditor may attach or seize the goods or debts of his debtor, in the hands of third parties, to

LONDON CLAY-LONDONDERRY.

abide the result of an action to be brought. There are several other customs of minor importance.

LON'DON CLAY, or Lower Eocene Strata (q.v.): series of beds occupying the lower basin of the Thames from Hungerford to Harwich and Herne Bay; also an extensive triangular region in Hampshire and the neighboring counties, whose base extends along the coast from Dorchester nearly to Brighton, while its apex reaches to Salisbury. The beds are arranged in three sections: London Clay Proper and Bognor Beds, maximum thickness, 480 ft.; Plastic and Mottled Clays and Sands, maximum thickness, 160 ft.; Thanet Sands, maximum thickness, 90 ft.; total, 730 ft. The London Clay is rich in fossils, such as palm and other fruits, masses of wood, mollusca of genera which now inhabit warmer seas, about 50 species of fish, remains of birds and pachydermatous animals, and of numerous turtles, with crocodiles and gavials.

The Plastic Clays, or Woolwich and Reading series of Prestwich, are very variable in character, consisting chiefly of clays and argillaceous sands, which are used

in manufacture of pottery.

LON'DON CON'FERENCES: diplomatic meetings in London. The first so designated was in 1826 and following years, for regulation of the affairs of Greece; the next was in 1830, to arrange terms of agreement or of separation between Belgium and Holland. The terms of agreement proposed not being accepted by the disputants, Holland made an appeal to arms; but the capture of Antwerp by the French, and the blockade of their coast by the English and French fleets, brought the Dutch to agree to a treaty of definite separation, 1833, May 21. A third conference was in 1840, on the Turko-Egyptian question; and one on Russia and its right to have war-ships in the Black Sea, 1871. In 1851, a protocol was signed in London by the representatives of all the Great Powers, on Danish affairs, and one in 1877 on Turkish affairs.

LONDONDERRY, lŭn'dŭn-dĕr-ĭ: maritime county, province of Ulster, Ireland, 40 m. in length by 34 in breadth, bounded n. by the Atlantic, e. by the county Antrim, and in part by Lough Neagh, s. by Tyrone, and w. by Donegal; 816 sq. m. or 522,315 acres, of which 91,759 are mountain, bog, waste, water, towns, etc. Pop. (1871) 173,906, of whom 77,358 were Rom. Cath., 58,779 Pres., 32,079 Episc.; (1901) 144,404. The surface is irregular. From the e. boundary, it rises gradually toward the w., for about 10 m., where commences an elevated district, rising in several points to considerable height; Sawell, on the s. border, being 2,236 ft. high. On the w. side, the surface falls gradually toward Lough Foyle. line along the Atlantic is generally bold and precipitous. The shore of Lough Foyle is in most places an unvarying The county may be divided longitudinally into two great geological districts, separated by the river Roe.

LONDONDERRY.

In the w., which is mountainous, mica-slate prevails, accompanied in some places by primitive limestone. the e., the mica-slate is overlaid by a succession of varying beds, capped, as in the adjacent Antrim district beyond the Bann, by a vast area of basalt, the dip of which, however, is the reverse of that on the opposite side of the river, and increasing in thickness toward the n., where in one place it reaches a depth of 900 feet. Many of the strata contain iron, and the ironstone of the mountain called Slieve Gallion was formerly worked, but the mining operations have been abandoned, from failure of fuel. The soil is very various, the greater part, with the exception of the alluvial spots on the banks of the several rivers, and of a considerable open district which stretches s. to Tyrone, being ill-suited for any cereal crop. In 1881, 186,918 acres were under crops of all kinds. The number of cattle was 96,693; of sheep, 30,161; of pigs, 23,946. The system of agriculture has been materially improved under the impulse given by the London soc. on the large estates which it holds in the county. The principal rivers are the Foyle, the Faughan, the Roe, and the Bann. The first is navigable as far as the city of L. for ships of 800 tons burden. The Bann, besides being a great source of motive-power for the staple manufacture of Ulster, that of linen, is noted for valuable salmon-fisheries. The chief towns are Londonderry (q.v.) City, Coleraine, Newton-Limavady, and Magherafelt. L. was in ancient times the seat of the great septs of O'Loughlin and O'Neill, and of their tributary sept of O'Cahan, or of O'Kane. At the immediate period of the invasion, the English, under John de Courcy, attempted a settlement, but were forced by the O'Neils to withdraw. A small garrison within their colony was established near the Antrim border, at Coleraine, upon the river Bann; but from the 14th till the 16th c., their tenure was little more than nominal; and though a number of forts, with a considerable garrison, were erected on the river Foyle 1600, it was not till the flight of the celebrated Tyrone and O'Donnell that the English occupation of the district was consummated, their forfeited lands being granted by the crown to the corporation of London, who still retain them, the management being vested in a body, 26 in number, who are elected by the common council, one half retiring each year. The incorporation, by charter, of this body, 1619, led to the formation of the county, called, from this circumstance, Londonderry. Portions of the county were assigned to the several city companies, the unassigned portions being held by the society. The memory of the confiscation long rankled, and perhaps still lingers, in the minds of the dispossessed Irish and their descendants; but in material prosperity the district made rapid and marked improvement. Agriculture is considerably in advance of the majority of Irish counties; and the domestic manufacture of linen, in former times, added materially to the comfort of the population, though this manufacture has

LONDONDERRY.

now been transferred mostly to large establishments. There is considerable export and import trade at the ports of Derry and Portrush, the seaport of Coleraine. The number of national schools in L. (1861), was 388, with 20,696 pupils. In 1880, there were 31,882 pupils.

LON'DONDERRY, or DERRY: seaport, and corporate and parliamentary borough, and a county of a city; cap. of the county of L.; on the river Foyle, 144 m. from Dub. Pop. (1891) 32,893; (1901) 39,892. L. arose under the shadow of a monastery founded here in the 6th c. by St. Columba. It was pillaged more than once by the Danes, and was occupied, but with many vicissitudes, by the English at the invasion. The town formed part of the escheated territory granted to the London companies, and under their management the city rose to some importance, and was strongly fortified. In the Irish war of the revolution, L. threw itself earnestly into the cause of William of Orange, and closed its gates against James II. The siege of L. is one of the most celebrated events in modern Irish history, and its memories are among the most stirring occasions of party animosity. Since that date, the city has steadily grown in extent and prosperity. It is beautifully situated on the left bank of the Foyle, upon a hill which overlooks the river. The walls are still preserved, and form an agreeable promenade; they surround a part of the town one mile in circumference, but the buildings have extended beyond them. A square from which the four main streets diverge, is called the Diamond. The left bank of the river is connected by an iron bridge, 1,200 ft. in length, with an extensive suburb called Waterside. The cathedral dates from 1633. A handsome Rom. Cath. cathedral has been erected. court-house is a building of some pretensions, and the historical events above alluded to are commemorated by a triumphal arch erected 1789, and a column in honor of the Rev. George Walker, gov. of the city during the memorable defense, of which he was himself the great organizer and inspirer. There are several important educational foundations, among them, Magee College, founded 1865. The arrangements and appliances of the port are on a good scale. Vessels of 500 tons can discharge at the quays, and there is a patent slip capable of receiving vessels of 800 tons. Steamers ply to Liverpool. Glasgow, and Belfast: there is railway communication with Dublin and Belfast, as well as a considerable advance toward direct communication with the western coast, and the Lough Swilly line is carried n. to Buncrana. L. has become a port of call for the Canadian steamers, which touch on their outward and homeward passages, at the entrance of Lough Foyle. In 1880, 1,569 vessels of 335,544 tons entered, and 1,452 of 326,175 tons cleared, the port. The chief manufactures are flaxspinning, distilling, brewing, rope-making, and tanning, There is also an extensive salmon-fishery,

LONDONDERRY.

LON'DONDERRY, ROBERT STEWART, second Marquis of (better known by his courtesy title Viscount Castle-REAGH): 1769, June 18—1822, Aug. 12; b. Mount Stewart, Down co., Ireland; eldest son of Robert, first marquis, who represented the county Down many years in the Irish parliament. Educated at the grammar-school, Armagh, and at St. John's College, Cambridge, he entered the Irish parliament 1789, though under age. 1796 he became Viscount Castlereagh; and in 1798 he was made chief sec. for Ireland. It was the year of the insurrection and the French invasion, on which account some allowance must be made for the terrible severities employed by the government in Ireland. Yet the cruel part that L. acted or tolerated in Ireland, in suppressing the rebellion, and effecting the union, always weighed on his reputation. In 1802, he was appointed pres. of the board of control, in the Addington adminstration. In 1805, he was promoted to the seals of the war and colonial dept., but resigned, with the whole of the cabinet, on Pitt's death 1806. In the following year, he resumed the office of war minister, when he organized the disastrous Walcheren expedition. Canning, then foreign sec., attacked Lord Castlereagh on this account with much acrimony and personality. The result was that both resigned, and a hostile meeting took place between them, 1809, Sep. 21, in which Canning was In 1812, after the assassination of Perceval, wounded. Lord Castlereagh became foreign sec., and held that post during the period illustrated by the military achievements of the Duke of Wellington. By this time the general direction of British policy was unalterably fixed by circumstances, and Lord Castlereagh has at least the merit of having pursued this fixed course with a steadiness, even an obstinacy, which nothing could abate. He was the soul of the coalition against Bonaparte, and it was only by his untiring exertions, and through his personal influence, that it was kept together. He represented England at the congress of Vienna 1814, at the treaty of Paris 1815, and at the congress of Aix-la-Chapelle 1818. As a speaker, he was confused and feeble; as a diplomat, he was easily mastered by Metternich (see Metternich's Autobiography, III., 552-560); but as a party administrator his abilities were almost unrivalled. While his foreign policy was favorable to the principles and policy of the 'Holy Alliance' abroad, he constantly recommended arbitrary and despotic measures at home. As the leader of the Liverpool government in the lower house, he carried the suspension of the Habeas Corpus Act 1817, and the 'Six Acts,' or 'the Gagging Bills,' as they were called, of 1819—measures which stamp his name with infamy. In private life L. was honorable and affectionate, though lacking warmth; in public life and politics, he gives no sign of knowing the meaning of fairness or honor. Indeed he seems to have conceived of politics as merely systematized 'job-

LONDONER-LONDON UNIVERSITY.

The retirement of Canning from the ministry, rather than be a party to the prosecution of Queen Caroline (1820), threw the whole weight of business on Lord Castlereagh. By the death of his father 1821, he became Marquis of Londonderry; but his mind became deranged through overwork, and he died, by his own hand, at his seat at Foot's Cray, Kent. The populace witnessed the funeral procession in silence; but when the coffin entered the walls of Westminster, a loud and exulting shout rent the air, which penetrated into the abbey, and broke upon the stillness of the funeral ceremony. This statesman, looked on by one party as a paragon of perfection, has been characterized by the other party as 'the most intolerable mischief that ever was cast by an angry Providence on a helpless people.' It is certain that the Toryism which he represented, cold, haughty, lacking sympathy with the world's toilers, is gone for ever from England. Modern Conservatism may or may not reproduce some of its mistakes; but it certainly is not actuated by its spirit.

LONDONER, n. lŭn'dŭn-ėr: a native or inhabitant of London. Londonism, n. lŭn'dŭn-ĭzm, a form of speech peculiar to London.

LON'DON PRIDE (saxifraga umbrosa): perennial evergreen, native of s. Europe, cultivated in gardens in England, whence it rapidly spread over the fields, and abounds in Ireland, where it is known as St. Patrick's Cabbage. Its flower stems are a few inches high, with small pink flowers in a loose panicle.

LON'DON UNIVER'SITY: established by charter 1836. When University College, London, was established (1825), it was known as L. U., though a mere joint-stock undertaking. A change took place 1836, when the former L. U. received a charter as University College, and at the same time, by another charter, was established the present L. U .- not a building for teaching, nor an organization of teachers and scholars, but a body of persons empowered to examine candidates and confer degrees. As this second charter was valid only during 'royal will and pleasure,' it required to be renewed at the death of William IV., and the accession of Victoria; and a new charter was accordingly granted, 1837, Dec. 5. tional powers were given, 1850, July 7, and a wholly new charter was signed, 1858, April 9, instituting many changes in the functions and arrangements of London University; again a wholly new charter, 1863, Jan. 6, with supplement, 1867, Aug. 27, admitting women to certain special examinations. University College, London, is still carried on in Gower Street, the original spot; but the University of London, or L. U., after occupying different apartments granted by government, is established (since 1870) in a special building in Burlington Gardens. The body consists virtually of a Chancellor, Vice-chancellor, 36 Fellows, and an indefinite number of Graduates.

The Chancellor is appointed for life or during royal pleasure, by the crown. The Vice-chancellor is annually elected by the Fellows from their own body. Fellows were named by the crown in the charter of 1858, for life; but as vacancies occur, the crown and the university fill them in a mode that gives some control to The Graduates are those who, at any time since 1836, have had degrees (Bachelor, Master, or Doctor of certain faculties) conferred on them by this university. The Senate is composed of the Chancellor, Vice-chancellor, and Fellows, and has the power of making all bylaws for the government of the university-within certain limits prescribed by the charter, and with the approval of the Sec. of State. The Convocation is composed of all the graduates, except those who have taken the lower degrees within less than two years; it meets occasionally, to vote and decide upon several minor matters: but the charter seems to confine all real power to the Senate.

When the new charter was given, 1858, there were 47 colleges and collegiate schools in connection with the L. U.—two in the colonies, the rest in the United Kingdom. The number was later increased; the Sec. of State and the Scnate having the power of deciding what additional establishments shall be included. But since 1863, it is no longer required that candidates for examination should be certificated scholars of any of these institutions: everything is thrown open, subject to the discretion of the senate. Examiners are appointed by the senate, which also defines the extent and mode of examination. By the charter theology is entirely excluded. Yet there is an optional Scriptural examination under by-laws. The degrees obtainable are those of Bachelor and Master of Arts, Bachelor and Doctor of Medicine, Bachelor and Doctor of Laws, Bachelor and Doctor of Science, Bachelor and Master of Surgery, Bachelor and Doctor of Music, and Doctor of Literature. There are examinations of women, distinct from men's, in Literature and Science combined; and these may be followed by special examinations for certificates of higher proficiency. Women are now admitted to regular degrees; and, since 1882, vote in con-

The number of candidates for matriculation 1880 was 1,400, of whom 680 passed: for B.A. (final), 170; 94 passed: for M.A., 21; 14 passed: for B.Sc. (final), 58; 27 passed: for D.Sc, 11; 1 passed: for LL.B. (final), 30; 19 passed: for M.B. (final), 60; 39 passed: for M.D., 22; 18 passed. General matriculation examination must be undergone a certain time previously by candidates for any degree.—L. U. stands in no special relation to King's College

(q.v.) in London.

LONE, a. lōn [an abbreviated form of alone: Ger. allein, all one]: solitary; retired; without a companion; single; far apart. Lonely, a. lōn'lĭ, solitary; retired; addicted to solitude. Lone'liness, n. -lǐ-nĕs, solitude

retirement; seclusion. Lonesome, a. lon'sum, solitary; secluded from society; dismal. Lone'somely, ad. -li. Lone'someness, n. -nes, state of being lonesome or solitary.—Syn. of 'lonely': secluded; sequestered; lone; lonesome; unfrequented.

LONG, a. long [Ger. lang; Icel. langr, long: F. longfrom L. longus, long]: not short; drawn out in length or time; continued, as in time or sound; extending far in space or prospect; dilatory: AD. to a great length or extent; not for a short time; throughout, as all his life long; not soon. Longish, a. long'ish, rather long. Longer, a. löng'ger, comp. deg. of long; of greater length: AD. for a greater duration. Longest, a. long'gest, superl. deg. of long; of the greatest extent. Long Ago, at a point of duration far distant in the past. Long-boat, strong and sea-worthy boat, formerly the largest boat carried by a ship; now generally superseded by the Launch (q.v.). Long-Bow, a bow of the height of the archer. Long Clothes, the clothes of an infant which hang loosely, and to a great extent over its feet. Long DOZEN, one or two more than a dozen. Long-Headed, endowed with forethought and sagacity; in an unfavorable sense, cunning or overreaching. Long home, the grave. Long hundred, six score, or 120. Long-lived, -līvd, living or lasting long. Long measure, a measure of length. Long Parliament, the parliament which met 1640, Nov. 3, and was expelled by Cromwell, 1653, Apr. 20 (see Charles I.: Cromwell, Oliver). LONG-PEPPER, the dried unripe spikes or fruit of two species of Piper, or pepper-vine, ord. Piperā'cĕæ. Long-PRIMER, -prim'er, a printing-type. Long range, the greatest distance to which shot or shells may be projected by guns or mortars effectively. Long-shanked, -shankt, having long legs. Long-sighted, far-seeing; sagacious. Long-stop, at cricket, one who is set behind the wicket-keeper to stop the balls which pass him. Long-spun, extended to a great length; tedious. Longsuffering, a. not easily provoked; patient: N. patience under offense; clemency. Long Tom, a sort of cradle used for washing out gold by miners at the gold-fields. Long-tongued, babbling; talking over-much. Long-VACATION, in the Eng. courts, a recess extending from 10th August to about the end of October. Longways, ad. löng wāz, or Long wise, ad. -wīz, in the direction of its length. Long-winder, -win'ded, tedious; protracted. Long Yarn, tedious harangue; likewise an incredible story; a sailor's tale. In the Long-Run, the whole course of things taken together; in the final result. LONG, SOON. THE LONG AND SHORT OF ANYTHING, the conclusion or summing up of a matter briefly expressed; the whole; the details as well as the general view. To DRAW THE LONG-BOW, to exaggerate; to tell lies. Note. -Long frequently forms the first part of a compound, and thus combined denotes, great extent; remoteness; extended duration.

LONG, v. long—followed by after or for [AS. langian to increase, to lengthen—from lang, long: Ger. verlangen, to long for]: to desire or wish for earnestly; to wish for eagerly. Long'ing, imp.: Add. having an earnest desire; having a preternatural craving: N. an earnest desire; a continual wish or craving. Longed, pp. longd. Long'ingly, ad. -li, with continual desire.

LONG: in OE., for BELONG.

LONG, Ell: soldier: b. Woodford co., Ky., 1837, June 16. He graduated at the Frankfort (Ky.) Milit. School 1855; entered the army as 2d lieut. 1st U. S. cav. 1856; was promoted 1st lieut. 1861, Mar. 1, and capt. May 24; commissioned col. 4th O. cav. 1863, Feb. 23; promoted brig.gen.vols. 1864, Aug. 18; brevetted maj.gen.vols. 1865, Mar. 13, and brig.gen. and maj.gen. U. S. A. the same day; mustered out of the vol. service 1866, Jan 15; and retired with rank of maj.gen. 1867, Aug. 16. Prior to the civil war his service was chiefly against hostile Indians, and 1861–65 he was active in the campaigns in the w. and s. He received his brevets for services in the battle of Farmington, Tenn.; defense of Knoxville; battle of Lovejoy's Station, Ga.; battle and capture of Selma, Ala., where he led a div. of cav. in a successful charge on the Confederate intrenchments.

LONG, GEORGE, M.A.: 1800, Nov. 4-1879, Aug. 10; b. Poulton, Lancashire, England: distinguished classical scholar. He was educated at Trinity College, Cambridge, where he subsequently became fellow. In 1824, he accepted the professorship of ancient languages in the Univ. of Virginia; but returned to England 1826, to become prof. of Greek language and literature in London University. He resigned 1831. The great labor of his life was his editing (1832-43) the Penny Cyclopædia, to which he was also one of the most valuable contributors. midst of these arduous duties, L. joined the Inner Temple, and was called to the bar 1837. In 1846, he was' chosen by the Benchers of the Middle Temple to deliver a three years' course of lectures on jurisprudence and civil law. In 1849 he became prof. of classical literature in the Proprietary College at Brighton, which appointment he held till 1871. L. was one of the best classical editors that England has produced; he was also one of the first authorities on Roman law. His merits as a translator were no less great, as evinced in his Selections from Plutarch's Lives, etc. L. contributed extensively to Smith's Classical Dictionaries; and besides editing Cicero's Orations and Cæsar's Gallic War, published Egyptian Antiquities, France and its Revolutions, etc. In 1373 he was granted a pension of £100.

LONG, Loch: body of water in w. Scotland, extending n. from the Firth of Clyde about 24 m., between the counties of Argyle and Dumbarton. It has an average breadth of about a mile; and its banks, mostly steep acclivities, abound in picturesque scenery. At its head is Arrochar.

LONG, STEPHEN HARRIMAN: 1784, Dec. 30-1864, Sep. 4; b. Hopkinton, N. H.: civil engineer. He graduated at Dartmouth College 1809; was appointed lieut. in the corps of U. S. engineers 1814, Dec.; was asst. prof. of mathematics in the U.S. Milit. Acad. till 1816, Apr.; brevetted maj. and transferred to topographical engineers 1816; brevetted lieut.col. 1826; appointed maj. of topographical engineers as a separate corps 1838, and promoted chief of topographical engineers with rank of col. 1861. He explored the region between the Mississippi river and the Rocky Mountains 1818–23 and that of the sources of the Mississippi 1823-24; had his name given to the highest summit of the Rocky Mountains, Long's Peak; surveyed the Baltimore and Ohio railroad 1827 -30; and was engineer in chief of the Western and Atlantic railroad in Ga. 1837-40. While in the latter service he invented and patented the truss bridge since bearing his name. He was retired from army service 1863, June, but was actively employed till his death.

LONGAN, long'gan (Nephelium Longan): one of the finest of fruits, of the same genus with the Litchi (q.v.), but reckoned superior to it. The tree which produces it is a native of China, and of other eastern countries, at least as far west as the mountainous regions on the e. frontier of Bengal. It is much cultivated in China. The leaves are pinnate, with few leaflets, the leaflets oblong, the flowers in lax panicles. The fruit is globose, or nearly so. It is exported to w. Europe in a dried state. It has been produced in Britain by aid of artificial

heat.

LONG BRANCH: a town in Ocean tp., Monmouth co., N. J.; about a mile from the ocean, but including the beach with its many hotels; one of the most popular sea-side resorts in the United States. The wateringplace proper is on the bluffs and plateau immediately back of the beach. The bathing is excellent and there are fine drives. At the height of the season, July 15-Sep. 1, more than 30,000 visitors are accommodated annually; besides the great hotels there are numberless boarding-houses, and hundreds of private summer residences, some of which are of great size and elegance. L. B. is reachable by railroad and steamboat from New York (38 m.): steamers land at an iron pier of great length. The 'Beach Drive' stretches for 5 m. on the sandy bluff about 20 ft. above the sea. West End is the name of a favorite continuation of L. B. westward: still further westward is Elberon. The town has many shops well supplied with wares of all kinds—many of them branches of large New York establishments. L. B. is one of the oldest of New Jersey sea-side resorts. It is named from the largest branch of the Shrewsbury river. Pop. (1880) 3,833; (1890) 7,231; (1900) 8,872.

LONGCHAMPS, lawng-shong': site of the principal race-course of Paris; part of the Bois de Boulogne (see Boulogne). For 400 years it has been a pleasure re-

LONGEVAL-LONGFELLOW.

resort for the gay city, and is still a brilliant promenade. In the 13th c. the abbey of L. was founded here; and under successive kings, monasteries, nunneries, and hospitals grouped themselves around this spot to the number of 40. Great festivals, called religious, were celebrated here, attracting vast crowds from Paris. Frightful ful corruption grew up in the monastic establishments; and under the revolutionary regime they were broken up 1789-90 and their lands confiscated and sold. The present park and race-course attract great throngs.

LONGEVAL, a. lŏn-jē'răl, or Longe'vous, a. -jē'răs [L. longus, long; ærum, an age]: long-lived. Longevity, n. lŏn-jĕr'ĭ-tĭ, great length of life; old age: see Vital Statistics: also Life, Mean Duration of: Mortality.

LONG'FELLOW, HENRY WADSWORTH, LL.D., D.C.L.: poet: 1807, Feb. 27—1882, Mar. 24; b. Portland, Me.; son of Stephen L., and descendant of John Alden and Priscilla Mullines of the Mayflower. His first poem, The Battle of Lovell's Pond, was written 1820, at the age of 13. He entered Bowdoin College 1821, and went to Europe 1826 to qualify himself to become a professor at Bowdoin, meanwhile having published 3 prose papers and 24 poems. He studied in France, Spain, Italy, and Germany, returning 1829 to occupy the chair of modern languages and literature for five years. During this period he contributed to The North American Review, and published his version from the Spanish of the Coplas de Manrique, and his book of European life, Outre-Mer. He was married 1831 to the daughter of Judge Barrett Potter, and, 1834, went again to Europe, where his wife Returning, 1836, he took the chair of modern languages in Harvard Univ., which he occupied for 17 1837 he opened his second period of poetic composition with the poem Flowers, though meanwhile he had written more than 40 translations of French, German, Spanish, Italian, Danish, and Swedish poems, most of which were embodied in The Poets and Poetry of Europe (1845), a masterly collection of representative European poetry, with biographical and critical comments. In 1839 he published his vol. of poems, Voices of the Night, and his prose romance, Hyperion; his Ballads and Other Poems (1841); Poems on Slavery (1842), also visiting Europe a third time; The Spanish Student, a drama (1843). The same year he married Miss Frances Elizabeth Appleton, of Boston, buying the historic Cragie house, at Old Cambridge, which he occupied the rest of his life. There his five children were born—Charles A., who served as lieut. during the civil war, Ernest, wellknown as an artist, and three daughters, Edith (wife of Richard H. Dana), Alice, and Anne;—and here 1861 his wife met her tragic death by fire. In 1846 appeared The Belfry of Bruges, and Other Poems; Evangeline, perhaps on the whole his greatest poem (1847); his last prose work, Kavanagh, a Tale (1849); The Golden Legend (1851), the first completed, but the second in order, of

LONGFELLOW.

the trilogy Christus; the other two being The New England Tragedies (1868) and The Divine Tragedy (1872). He retired from his professorship, to apply himself exclusively to literary work, 1854. Then came a period of fresh productiveness, during which appeared The Song of Hiawatha (1855), suggested by the Finnish epic, Kalevala, whose metre and general structure it follows, giving us the nearest approach that we have to an Λ merican epic; and The Courtship of Miles Standish (1858), a poetical version of the early days of the Mayflower and the first settlers of Mass., among whom the poet's ancestors were prominent. The Tales of a Wayside Inn were published 1863, and Flower-de-Luce 1867. After his wife's death, however, he applied himself chiefly to his translation of Dante's Divina Commedia, with copious and scholarly notes, which appeared 1867, and is the best version of that poem in our language, and by many considered the greatest of all his literary achievements.—In 1868 he made a fourth journey to Europe and was everywhere received with marked honor, especially in England where his poems are more popular than those of any other American poet, and where on this visit both Cambridge and Oxford gave him the degree D.C.L., that of LL.D. having been conferred on him by Harvard, 1859. He published Three Books of Song (1872); Aftermath (1873); The Hanging of the Crane (1874); The Masque of Pandora (1875); Keramos (1878); Ultima Thule (1880). Besides this original work he compiled and edited during these later years, 31 vols. of Poems of Places, and composed enough of his own to give us the posthumous vol. of lyrics, In the Harbor (1882); and a considerable fragment of a dramatic poem, Michael Angelo (1883). His poetry is characterized by invariable fitness of form, faultless finish and elegance, combined with great simplicity of language and lucidity of style. Its moral tone is always pure and elevated; and everywhere his rare scholarly refinement of sentiment and expression is man-His gentle, amiable, and sympathetic spirit was infused into his verse, winning the reader's love for the poet as much as his admiration for his poetry. He appeals strongly but quietly to all the deeper feelings and affections of the human heart, and hence is preëminently the poet of the people, there being probably no other poetry in the language that is read as much as his. Many of his works have been translated into every language of Europe, and one or two languages of Asia. See Works, Riverside Edition, 11 vols.; Lives, by Stoddard and by Underwood; and Life, with Extracts from his Journals and Correspondence, by the Rev. Samuel Longfellow (q.v.), brother of the poet.—Ernest Wads-WORTH L., son of the poet, b. 1845, Cambridge, Mass., is an artist, having studied in Paris, 1865, and painted in Italy, 1868; now has his studio in N. Y. Pines, Misty Morning, and John and Priscilla, are among his best known paintings.

and of the

LONGFELLOW-LONGFORD.

LONGFELLOW, SAMUEL: Unitarian minister: b. 1819, June 18, Portland, Me.; brother of Henry W. L. He graduated at Harvard, 1839; at the divinity school, 1846; became pastor of a church at Fall River, Mass., 1848; and in Brooklyn 1853; went abroad 1860; was without a charge till 1878, when he became pastor of a church in Germantown, Penn.; returned to Cambridge 1882. He is author of numerous hymns, and has published Thalatta, a collection of seaside poetry (1853), Life of Henry Wadsworth Longfellow, with Extracts from his Journals and Correspondence (1886), and Final Memorials of Henry W. Longfellow (1887). Died 1892, Oct. 3.

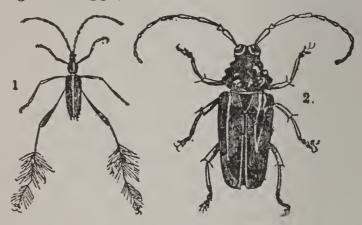
LONGFORD, lawng'ford: inland co. of Leinster; 29 m. long by 22 m. broad; 269,409 acres, of which 191,823 are arable; pop. (1891) 52,553; (1901) 46,672. The sur. is for the most part moist and flat. Many small lakes are in the county; and the river Shannon, and its supplying lakes, connect L. with the county and city of Limerick. Its navigation is also connected with Dublin by the Royal canal; and there are two branches of the Midland Great Western railway which pass through the county. The s. of the county forms part of the central limestone district of Ireland. The n. is a continuation of the clay-slate which prevails in Cavan, the two districts being separated by a belt of yellow sandstone and conglomerate. Deep beds of marl are found in many of the boggy districts. Marble of good quality also is found, and ironstone, with coal, shale, and lead, of good quality, but not in remunerative quantity. The limestone district of the s. is suited to tillage, and produces excellent wheat. The n. is chiefly pasture-land. The number of acres under crop (1881) was 74,866. In the same year, there were 51,547 cattle, 24,140 sheep, and 17,900 pigs. The chief towns are Longford (q.v.), Granard, and Ballymahon. The number of national schools (1871) was 132, attended by 7,305 pupils; (1880) 106 schools attended by 14,095 pupils. L. anciently formed part of the kingdom of Meath, and as such was included in Henry II.'s grant to Hugh de Lacy. It was erected into a county 1564, but in the rebellion of 1641 it was recovered for a brief period by the O'Farrells, and, on the suppression of this rising, almost the entire county was distributed, as confiscated lands, to a new race of colonists. The antiquities are of much interest. The islands of Lough Ree are especially rich in monastic remains.

LONG'FORD: capital of county Longford, Ireland; 75 m. w.n.w. from Dublin by the Midland Western railway, on a small river called the Camlin. It is a well-built town. The Rom. Cath. cathedral, recently erected, is a very spacious, and indeed magnificent building, of the Ionic order. Pop. (1871) 4,375, of whom 3,473 were Rom. Catholics, and 645 Prot. Episcopalians; (1881) 4,380. The chief commerce of L. is in the agricultural produce of the district. No manufacture of any impor-

LONGICORNES-LONGINUS.

tance exists in the town. It is connected with Dublin and with Sligo by the Midland Western railway, as also with Dublin by the Royal canal.

LONGICORNES, lön-ji-kawr'nēz: family of tetramerous coleoptera, containing a vast number of species, among which are many of the largest and most splendid beetles. They are remarkable for the length of their slender antennæ, which are often longer than the body. They all feed on vegetable food, some on leaves, some on roots, and are mostly inhabitants of forests; the females depositing their eggs, by means of a long, strong, horny



Examples of Longicornes:
1, Cerambyx hirtipes; 2, Trachyderes rigrofasciatus.

ovipositor, beneath the bark of trees, on the wood of which the larvæ feed. The L. abound chiefly in warm countries, particularly in S. America; the number of species in some temperate countries, however, is considerable; but some of those so reckoned have probably been imported from foreign countries in the larva state, in timber, to which they often do great injury.

LONGIMETRÝ, n. lŏn-jĭm'ĕ-trĭ [L. longus, long; Gr. metron, a measure]: the art or practice of measuring distances or lengths.

LONGING, LONGINGLY: see Long 2.

LONGINUS, lon-jī'nus, Dionysius Cassius: Platonic philosopher, eminent critic, and famous rhetorician: born, according to some, at Emesa, in Syria, and according to others, at Athens, about 213—probable conjecture Emesa, about 210; d. 273. In his earlier years, he travelled much in the company of his parents, and made the acquaintance of many celebrated scholars and philosophers. He studied Greek literature at Alexandria, where he was pupil of Ammonius and Origen, and subsequently settled as a teacher of rhetoric in Athens, where he soon acquired great reputation. His knowledge was immense: he was called 'a living library' and a 'walking museum,' but his taste and critical acuteness were no less wonderful. He was probably the best critic of all antiquity. In an age when Platonism was giving place to the semi-oriental mysticism and dreams of Neo-Platonism, L. stands conspicuous as a genuine disciple of

LONGIPENNATÆ-LONG ISLAND.

the great master. Clear, calm, rational, yet lofty, he despised the fantastic speculations of Plotinus, who consequently would not admit that L. was a philosopher, but —since he stooped to criticise the diction and style of Plato—pronounced him a mere philologist. In the latter years of his life, L. accepted the invitation of Queen Zenobia to undertake the education of her children at Palmyra; but becoming also her prime political adviser, he was beheaded as a conspirator with her against Rome, by command of Emperor Aurelian, 273. L. was a heathen, but a generous and tolerant heathen. Of his works, there remain for the most part only fragments of letters and criticisms; for the very important treatise Peri Hypsous (On the Sublime), formerly unhesitatingly ascribed to him, is of somewhat doubtful authorship, though certainly the circumstantial evidence is so much in favor of L. as the author as to justify its provisional ascription to him. See Egger, Longini quæ supersunt (1837); Vaucher's Etudes Critiques on L. (1854); and Jahn's edition of the De Sublimitate treatise (1867). There are several English translations.

LONGIPENNATÆ, n. plu. lön'ji-pĕn-nā'tē, or Longipen'nes [L. longus, long; penna, a wing]: in Cuvier's ornithological system, that section of ord. Palmipedes characterized by long wings and great power of flight. The wings are often very narrow. They all are seabirds, and many venture to a great distance from shore. Their hind-toe is small and free, or lacking. They cannot dive and pursue their prey under water, but they swim well, and their movements in the air are very graceful. Petrels, shearwaters, gulls, terns, noddies, skimmers, and albatrosses, are examples. Lon'gipen'nate, a. -pĕn'nāt, long-winged—applied to birds.

LONGIROSTRAL, a. lŏn'jĭ-rŏs'trăl [L. longus, long; rostrum, a beak or bill]: long-beaked—applied to birds. Lon'girostres, n. plu. -trēz, tribe of birds of ord. Grallæ, having generally a long, slender, feeble bill, and inhabiting sea-shores and marshy places, where they wade in mud or ooze, seeking worms and other food. To this tribe belong snipes, woodcocks, curlews, godwits, sand-pipers, etc.

LONG ISLAND: island off the coast of Conn., forming three counties (Kings, Queens, and Suffolk) of the state of N. Y.; n. lat. 40° 33′—41° 10′, w. long. 72°—74° 2′; bounded n. by Long Island Sound, e. and s. by the Atlantic Ocean, w. by the bay and harbor of N. Y.; abo to 120 m. long from e. to w., and 12 to 24 m. in breadth; 1,682 sq. m. The w. end of L. I. is separated from New York city by an extension of Long Island Sound known as the East river, nowhere more than three-quarters of a m. wide. L. I. resembles a fish in shape, with a hilly backbone' extending along the n. shore, and an immense sandbank along the s., the general slope being toward the ocean. Between the island proper and the sand strip on the s., are numerous inlets from the ocean,

the largest of which is the Great South Bay, which extends without a break 100 m., with Great South Beach between it and the ocean. Peconic Bay forms a deep indentation on the e. The formation of the 'backbone' is of unmodified drift, and the country between it and the Sound is of similar material with sand and gravel added. S. of this ridge are large tracts covered with accumulated organic matter and very fertile; and wherever the unmodified drift predominates there is a rich loam exceedingly favorable to market gardening. The mean annual temperature shown by 24 years' observations is 48.74° at E. Hampton, 51.62° at Flatbush, 49.87° at Jamaica; and the mean rainfall 38.60 in. E. Hampton, 42.74 in. Flatbush, 39.07 in. Jamaica. During this period there was a mean of clear days of 246 per annum, and cloudy 119. Wild fowl and deer are still found in the forests and thickets of Suffolk co., but all the larger game that formerly abounded has been exterminated. Wild fowl are successfully hunted, and now form the principal attraction for sportsmen. Cod and mackerel fishing are carried on to a considerable extent; large quantities of menhaden are annually taken for manufacture into fertilizers; but the whale fishery formerly an important industry—now attracts but little capital or labor. The resources of the soil have become more largely known since the late Alexander T. Stewart began developing the long-neglected Hempstead Plains (see GARDEN CITY), and many of the former barrens are being cultivated, especially for fruit, flowers, trees, and vegetables, with large returns. In 1891 there were 485,000 acres of farm lands valued at nearly \$50,000,000 which yield annual product aggregating \$8,000,000. Queen's co. is the largest producer of market provisions, and raises nearly ten times more than Suffolk co. and twice as much as Kings. It leads also in potatoes, buckwheat, rye, and milk. Nearly two thirds of the potato crop of the island is derived from Queens co. Other farm produce and hay are more abundant in Suffolk co.

Large quantities of flowers and fruit are grown on the island; of the latter apples and grapes are the chief. Poultry-farming is also a thriving industry, and eggs as

well as dressed meats are supplied in abundance.

The fishery industries of L. I. are among the most important, and afford employment to nearly 3,000 men. About 40 vessels, manned by 700 men, are engaged in the menhaden fishery; and the annual catch, estimated at 150,000,000, is valued at \$1,250,000. Nearly 400 boats and 2,300 men are employed in the shell-fishery, whose annual yield is placed at 785,000 bu. of oysters; 300,000 bu. of soft-shell clams; 200,000 bu. of hard-shell clams. Brooklyn ranks third among American manufacturing cities, and King's co. yields a larger manufacture-product than any state in the Union excepting N. Y., Penn., Mass., Ill., and O. L. I. is well-supplied with railroads, the Long Island r.r. traversing nearly the entire length

LONG ISLAND.

and having numerous cross-branches connecting important cities, towns, and villages. Several ferries connect it with New York, and during the summer season a large number of steamboats ply between its popular resorts and New York and neighboring cities. Coney Island, Rockaway, Quogue, Babylon, Fire Island, Shelter Island, Gardiner's Island, Fisher's Island, Plumb Island, S. Hampton, E. Hampton, Moriches, and Montauk Point are among its popular summer resorts. The principal cities and towns are (Kings co.) Brooklyn, E. New York, Flatbush; (Queens co.) Long Island City, Flushing, College Point, Jamaica, Hempstead, Garden City, Woodside, Whitestone; (Suffolk co.) Huntington, Greenport, Sag Harbor, Bridghampton, River Head, Babylon, Bay Shore, Sayville, and Northport. The federal govt. maintains 32 life-saving stations and 30 lighthouses along the coast of L. I. The history of L. I. extends through the early Indian, Dutch, and English periods. It was at one time occupied by 15 tribes of Indians, of whom a few Shinnecocks and Montauks remain, and was variously known as Paumanacke, Sewanhacky, Wamponomon, and Matouwacks. The Dutch discovered it 1609 and named it Lange Eylandt. James I. included it in a grant to the Plymouth company (1620), by whom it and the adjacent islands were patented to Alexander, Earl Stirling, whose son and heir surrendered the patent to the Duke of York 1640. Settlements were made at Brooklyn 1636, Gardiner's Island, Southhold, and S. Hampton 1640, and Hempstead 1643. It received its present name from the English 1693. Verrezzano is supposed to have sailed along its coast 1524, and Hendrick Hudson's first boat-crew to have landed on the Coney Island beach 1609. The first strategic battle of the revolutionary war was fought in Brooklyn 1776, Aug. 26-28 (see Long Island, Battle of), and defensive works were erected in Kings co. 1812 in expectation of a British attack on New York .- Pop. (1880) Kings co. 599,495, Queens co. 90.574 Suffolk co. 53,888; total 743, 957; (1901) Kings co. 1,166,582, Queens co. 152,999, Suffolk co., 77,582; total 1,397,163.

Americans in the revolutionary war 1776, Aug. 26. After the British evacuated Boston, Washington fortified New York and its approaches. He entrusted the defense of L. I. to Gen. Greene, who constructed a line of entrenchments and redoubts near Brooklyn, erected a battery at Red Hook, and a fort on Governor's Island. The battle was fought mainly between these entrenchments and the s. side of the island, where the wooded range of hills was crossed by three roads; one near the Narrows to Gravesend Gay; the central one through Flatbush; the third through Bedford to Jamaica. 1776, Aug. 22, 9,000 British under Sir Henry Clinton landed at Gravesend, but finding the central pass occupied, awaited reinforcements. The Americans were commanded by Gen. Sul-

LONG ISLAND CITY.

livan, who had superseded Greene because of the latter's being sick. Aug. 24, Washington visited the lines and appointed Gen. Putnam to the command. Aug. 25 the British reinforcements arrived, and active operations commenced next day. Aug. 26, making a feint of taking the passes near the Narrows and through Flatbush, Clinton quietly took possession of the one to Bedford, which the Americans had neglected properly to guard. His descending this road was the signal for an advance along the whole line. Though the Americans fought bravely, they were taken at such disadvantage that a considerable body of them under Sullivan were forced to surrender, as was also the command of Stirling, who had opposed the British left. The British were now before the American works, and proceeded to intrench themselves and plant batteries. Seeing no hope of maintaining himself under the circumstances, especially as the British fleet threatened to come up the river and cut off Brooklyn entirely, Washington, who now personally commanded the Americans, decided to recross with his army and abandon L. I. This he did during the night of Aug. 29, and from that time on to the close of the war, the island remained in the hands of the British.

LONG ISLAND CITY: a former city and cap. of Queens co., N. Y.; now a part of the bor. of Queens, N. Y. city, on the East r. and Newtown creek; at terminus of on the East river and Newtown creek; at terminus of the Long Island Flushing and North Side and the Central. railroads. It is about 5 m. long n. to s., 3 m. wide e. to w.: 12 sq. m. It is separated from Brooklyn by Newtown creek; has a water front on the creek and East river of 10 m.; is connected with New York by ferries at Hunter's Point and Astoria; comprises the former villages of Hunter's Point, Ravenswood, Astoria, Blissville, and Dutch Kills; and is connected with Brooklyn by several lines of street railroads. The chief industries are oil-refining, terra-cotta work, manufactures of asphalt. carpets, chemicals, pianos, and rugs. The census of 1890 showed that Long Isl. City had 313 manufacturing establishments with a total cap. of \$6,871,629; employing 3,344 persons; paid in wages \$2,313,889; materials \$3,233,-296; value of products \$7,694,369. Astoria contains manufactories of pianos, jewelry, carpets, and carriages, and has a post-office; Ravenswood and old L. I. C. have post-offices. Hunter's Point has extensive petroleum warehouses and refineries and large chemical works. The Astoria and Ravenswood districts are beautifully located, laid out with fine streets and drives, and have many costly residences, occupied chiefly by New York and Brooklyn business men. L. I. C. has the co. court house, expensive water-works, gas and electric light plants, 14 churches, 5 ward (public) schools, the freight depot of the South Side railroad, 1 state bank (cap. \$100,-000), 1 savings bank, and daily and weekly newspapers. The net public debt 1890 was \$967,000: tax rate \$3.16. Pop. (1870) 3,867; (1880) 17,129; (1890) 30,396.

LONG ISLAND SOUND-LONGMAN.

LONG ISLAND SOUND: body of water separating Long Island on the s. from Conn. and N. Y. on the n.; about 110 m. long, and 2 to 20 m. wide. At its e. end it connects with the Atlantic Ocean by a passage known as the Race; and at its w. extremity it contracts into the East river which connects with New York Bay and the Hudson river and, through the Narrows, with the ocean. Its e. portion is everywhere less than 200 ft. deep; its w. portion, w. of the mouth of the Connecticut river is in general 75 to 100 ft. deep. It has many harbors, two or three very good. The three largest rivers which empty into it are the Thames, Connecticut, and Housatonic, all flowing from the north. The Conn. shore presents a very irregular line of inlets and bay's and projecting headlands, fronted with small rocky islands and reefs: the Long Island shore is less broken. Immense numbers of coasting vessels make the Sound their thoroughfare; but large ocean steamships usually enter New York harbor through the Narrows, because of the narrow and crooked passage through 'Hell-gate' at the w. end of the Sound.

LONGITUDE, n. lŏn'jĭ-tūd [F. longitude—from L. longitud'inem, length of time or space—from longus, long: It. longitudine]: the angular distance east or west of any place on the earth's surface from a certain fixed point or meridian—in Eng., and often in some other countries, that point is the Royal Observatory at Greenwich, near London-but sometimes the cap. of a country, e.g. Paris, Washington, is taken as the point (see LATITUDE). Lon'-GITU'DINAL, a. -tū'dĭ-năl, pertaining to longitude or length; extending or running lengthwise. Lon'gitu'-DINALLY, ad. -li. Longitude from, the longitude of the place sailed from. LONGITUDE IN, the longitude of the place sailed to. The Longitude of a heavenly body, the arc of the ecliptic intercepted between the first point of Aries, and the secondary circle to the ecliptic, which passes through the place of the body. CIRCLES OF CE-LESTIAL LONGITUDE, great circles of the celestial concave passing through the poles of the ecliptic, and so called because they severally mark out all points which have the same longitude—also called CIRCLES OF LATI-TUDE, because latitudes are measured upon them.

LONG LAKE: body of water in the n.e. of Hamilton co.; one of the Adirondack lakes; 18 m. long, and 3 m., or less, in width; 1,575 ft. above sea-level. Its length and comparative narrowness make it resemble a river, and it is an important line of travel by boat through the region. The scenery is picturesque, and there are some fine views of distant mountains.

LONG'MAN, THOMAS: 1699-1755, June 18; b. Bristol, England: publisher. He was apprenticed to the bookselling and stationery trade in London 1716; entered into partnership with his employer 1725; began publishing Ephraim Chambers's Cyclopædia of Arts and Sciences 1728, and brought out five editions 1728-46. It was

LONGOBARDS—LONGSTREET.

afterward used as the basis for Rees's Cyclopædia, 4 vols. 1781-86. With one exception the Cyclopædia of Arts and Sciences was the first cyclopedia in the English language arranged topically and alphabetically, and to a considerable extent was the foundation of all subsequent ones. L. was one of six book-sellers who engaged Dr. Samuel Johnson 1747 to prepare a dictionary of the English language.—His nephew, Thomas L., 1731-1797, Feb. 5, b. London, entered his uncle's firm 1754, and subsequently left it to enter into partnership with Dr. Abraham Rees, with whom he published a new edition of Chambers's Cyclopædia, edited by Dr. Rees, 4 vols. 1776-86. He was one of the first exporters of books to America.—The grand-nephew of the first Thomas, THOMAS NORTON L., 1771-1842, Aug. 28, b. London, became a partner with his father 1792, and for nearly 50 years was head of the firm. Under his management the firm published many important works, including Lardner's Cabinet Cyclopædia, 133 vols. (1829-46); and an enlarged ed. of Chambers's Cyclopædia, edited by Dr. Rees and named Rees's Cyclopædia, 39 vols. text, 6 vols. plates (1802–19).

LONGOBARDS: see Lombards: Lombardy.

LONG OF, prep. long ov [from along of (see Long 1)]: in OE., owing to; by the fault of.

LONG'STREET, JAMES: soldier: b. Edgefield district. S. C., 1821, Jan. 28. He graduated at the U.S. Milit. Acad. 1842: served in the milit. occupation of Texas 1845-46; took part in the principal battles of the Mexican war, in which he was several times wounded, and for gallantry was promoted 1st lieut. and brevetted capt. and maj.; was promoted capt. and served as adjt. and paymaster till 1861, June 1, when he resigned; and was soon afterward appointed brig.gen. in the Confederate army. He commanded a brigade in the first battle of Bull Run; was promoted maj.gen. 1862; commanded the rear-guard of Gen. Jos. E. Johnston's army on the retreat from Yorktown; made a stand at Williamsburg 1862, May 2, and held it till the main Confederate army escaped toward Richmond; commanded the 1st corps of the Army of N. Va. in the second Bull Run, and won the day by relieving Jackson; held the Confederate left at Fredericksburg, and commanded the right wing of the Army of W. Va. at Gettysburg; and on being transferred to the Army of the Tennessee under Gen. Bragg commanded the left wing at Chickamauga. In 1863, Nov., he attempted to capture Knoxville by siege and assault. but failed. Early in 1864 he rejoined Gen. Lee in Va.; was wounded by his own men in the Wilderness May 6 and disabled till Oct.; commanded the 1st corps Army of N. Va. in Lee's final campaign around Petersburg and Richmond; and was included in the surrender at Appomattox. After the war he settled in New Orleans; was appointed by Pres. Grant surveyor of the port 1869 and postmaster 1871; removed to Ga. 1875; and was

LONGTON-LONS-LE-SAULNIER.

supervisor of internal revenue, U. S. minister to Turkey 1880,81, and U. S. marshal for Ga. 1881-84.

LONGTON, lawng'ton: town of Staffordshire, England, in the district of the Potteries. L. was incorporated as a municipal borough 1865. It is about two m. s.e. of Stoke. The recent great prosperity of the town is due to the manufacture of china and earthenware. Pop. (1871) 19,748; (1881) 18,615.

LONG VACA'TION, in English Legal Usage: period of the year in England when suits cannot be carried on, but are for some purposes suspended—viz., Aug. 10—Oct. 24 at common law, and to Oct. 28 in chancery; hence called the lawyer's holiday.

LONG/WORTH, NICHOLAS: 1782, Jan. 16—1863, Feb. 10; b. Newark, N. J.: viniculturist. He spent his youth in S. C.; went to Cincinnati 1803; studied law and practiced successfully 25 years; and then engaged in grape-growing for the purpose of manufacturing wine. For several years he experimented with foreign vines without satisfactory results; but, after cultivating native vines, he acquired wide reputation for his still and sparkling Catawba and Isabella wines. He also experimented with the strawberry, and produced a species bearing his name. L. left a large fortune and was liberal to the poor. He published Buchanan's Treaise on the Grape, with an Appendix on Strawberry Culture (Cincinnati 1856).

LONGWY, long-ve': fortified town in the dept. of Meurthe-et-Moselle, France, on the Chiers river and a railroad; 1 m. from the Belgian frontier, 34 m. n.n.w. of Metz. The fortress is rated as second class, was planned by Vauban 1682, and was taken by the Prussians 1792, 1815, and 1871, Jan. 25. L. is divided into an upper and a lower town. The former is on a hill rising sharply from the river and contains the fortress, town hall, hospital, milit. prison, and a number of churches; the latter has manufactures of calico, delft-ware, porcelain, leather, lace, and table-covers. L. was founded in the 7th c., and was ceded to France 1678. Pop. about 4,000.

LONIGO, $l\bar{o}$ - $n\bar{e}'g\bar{o}$: town of the Italian states, province of Vicenza, in a valley 12 m. s.w. of the city of Vicenza. It is protected by three strong towers, whose antiquity is attested by the inscription they bear. The inhabitants are chiefly agriculturists and traders. Pop. 6,786.

LONS-LE-SAULNIER, long-leh-sō-nē-ā': town of e. France, cap. of the dept. of the Jura, at the confluence of the Seille, Vallière, and Solman, about 55 m. s.e. of Dijon. It is in a beautiful valley, surrounded by vine-clad hills, and was founded as early as the 4th c., when its salt-springs were discovered, from which 20,000 quintals of salt are yearly extracted. The chief industry is the manufacture of sparkling wines. Rouget de Lisle, composer of the Marseillaise, was born here. Pop. (1891) 12,610.

LOO-LOO-CHOO.

LOO, n. 18 [F. lot, a lot, a prize]: a game at cards, having varying laws: V. to beat at the game of loo. Loo's ING, imp. Looed, pp. lôd. Loo-table, a round table for a sitting-room—so called from being conveniently adapted for a circle of persons playing at the game of loo. Note.—Loo is said to be a mere abbreviation of lanterloo—from F. lanturelu, nonsense! fiddlestick! part of the refrain of a famous vaudeville in France, 1642; as slang, it was early used to give an evasive answer: see Skeat.

LOOBY, n. lô'bĩ [Icel. lubbaz, to loiter about; lubbi, a dog having a shaggy coat and hanging ears, a lazy servant: W. llabi, a long lubberly fellow (see Lob)]: a dull, lumpish, lazy fellow; an awkward, clumsy person. Loobily, a. lô'bĭ-lĭ, awkward; clumsy: Ad. in an awkward, clumsy manner.

LOO-CHOO, or Liu-tchiu, lô-chô': native name of a group of about 80 islands called by the Chinese Liéukiéu, and by the Japanese Riu-kiu; in the Pacific Ocean, about 400 m. off the coast of China, lat. 24°-29° n., long. 127°-129° e. The largest and most southern, called Great Lu-tchu, or Okinawu, is about 65 m. long and 13 Its shores are beautiful; fields and forests are clothed with green, pine-woods crown the summits of the hills, and gardens and cornfields adorn their slopes. In loveliness and variety of landscape, as in the careful attention given to agriculture, especially in the s. part of Great Lu-tchu, which looks like one vast enchanting garden, few places surpass these islands. The principal products of the group are rice, millet, sugar, cotton, tobacco, indigo, and tea; of less importance, bananas, Domestic pine-apples, oranges, peaches, and plums. animals are very numerous—ducks, geese, swine, goats, cattle, and horses. The chief minerals are iron, coal, and sulphur, probably also copper and tin. Sugar, and a liquor called saki, distilled from rice, are exported to Japan. The manufacturing industry of the inhabitants is as great as the agricultural. They make paper, cloths, coarse linens, earthen and lackered wares, bricks, tobacco-pipes, and baskets.

The people are partly Japanese and partly an aboriginal tribe closely allied to the Japanese stock; their language is an independent dialect of Japanese, though both Chinese and Japanese are used for literary purposes. Their religion is chiefly a mixture of the doctrines and practices of Confucius with those of Buddha. The government, as in China, is mainly in the hands of an aristocracy of learned men. The islands, which till lately were claimed as tributary both by China and Japan, were formally annexed by the latter power 1879. China protested, and for a time war seemed inevitable. The area of the islands is given at a little over 800 sq.

m.; pop. about 167,000.

LOODIANA-LOOK.

LOODIANA (better spelt, Ludhiána) lô-dē-â'na: dístrict of British India, one of the three districts into which the division of Ambala, or Umballa, in the Punjab, is divided. The dist is immediately s. of the Sutlej, and consists mostly of a great plain, partly very fertile, partly sandy. There is little irrigation, and almost no trees. Area, 1,375 sq. m.; pop. (1881), 618,835.

LOODIANA: cap. of the dist. of L., takes its name from the Lodi dynasty of Afghans ruling in India. It is 1,100 m. n.w. of Calcutta, on a navigable nullah or stream, which joins the Sutlej from the e. about 8 m. below the town. The principal manufactures are cotton-cloth and Cashmere shawls, the latter inferior in quality to those made in Cashmere. L. is a military station of some importance. Over the Sutlej a bridge was opened 1870, Oct., to connect the Delhi and Lahore railways.—Pop. (1881) 44,163, mostly weavers.

LOOF, n. lôf [see LUFF]: after-part of a ship's bow; the guns mounted in this portion of the vessel are called loof-pieces; the windward side of a ship. Aloof, on loof, that is, out of reach.

LOOF, n. lôf [Gael. làmh, the hand: Icel. lófi, palm of hand]: in Scot., the hand; the palm of the hand.

LOOK, v. lûk [Bav. luegen, to look: Swiss, lugen, to look; lugen, eyes: W. lluch, a glance: OF. louquer. to look askance]: to direct the eye to or from anything; to consider; to apply the mind or understanding; to examine; to have any particular appearance; to have any air or manner; to face or front—usually followed by on, at, for, after, towards; to search for: N. the act of looking; the air of the face; sight; glance; appearance; view: Int. see; behold. Look'ing, imp.: Adj. having appearance, as in good-looking: N. expectation, followed by for. Looked, pp. lûkt. Looker, n. -ér, one who looks; a spectator. To LOOK ALIVE, in familiar slang, an expression urging to greater speed or activity. To LOOK ABOUT ONE, to be vigilant. To LOOK AFTER, to attend to or take care of. To LOOK BLACK, to frown; to show signs of strong dislike. To LOOK BLANK, to have a stupid bewildered appearance, arising from the sudden and unexpected announcement of something of an unpleasant nature. To LOOK DOWN ON OF UPON, to treat with indifference or contempt. To LOOK FOR, to expect; TO LOOK IN THE FACE, to face or meet with to search. To LOOK IN THE FACE, to recommendate to LOOK INTO, to inspect closely; to examine.

To LOOK INTO, to inspect closely; to examine. boldness. To Look on or upon, to respect or esteem; to regard as good or bad; to consider; to view; to be a mere idle spectator. To LOOK OUT, to be on the watch; to search for and discover; to choose. To LOOK OVER, to examine one by one; to refrain from censure or punishment, as for a fault. To LOOK TO OF UNTO, to watch; to take care of. To LOOK UP, to search for and find; to show a tendency to rise or improve, as prices are looking up. To Look up To, to respect. LOOKING FOR, expectation. LOOKING-

LOOKOUT MOUNTAIN-LOOM.

GLASS (see MIRROR). LOOK-OUT, a small watch-tower. or an elevation, on the roof of a building; a view; a prospect; watch.

LOOK-OUT MOUNTAIN, Battle of: see CHATTA-

NOOGA, BATTLE OF.

LOOL, n. lôl: a vessel used to receive the washings of ores in mining districts.

LOOM, n, lôm [AS. geloma, or loma, utensils, household stuff: Gael. làmh, a hand or handle]: literally, a utensil, or a tool; a simple machine in which cloth is woven—the one set of threads running lengthwise in the material being called the warp, and the other set running across being called the woof or weft; the part of an oar lying within the boat when rowing. Hand-loom, a loom wrought by the hand. Heir-loom, see Heir. Power-loom, a loom wrought by steam. Jacquard Loom, jäk-kârd'-, or zhā-kârd'-, a machine invented by M. Jacquard of Lyons for weaving figured goods.

LOOM, v. lôm [Icel. ljóma, to gleam, to shine: It. lume, light: AS. leoma, a ray of light, a beam]: to be seen imperfectly, as a ship on the horizon, or seen through a mist; to appear indistinctly above the surface either of sea or land; to appear larger than the real size, and indistinctly; to appear to the mind's eye faintly or obscurely, or, as it were, in the distance. Loom'ing, imp.: N. the indistinct appearance of a distant object, as in a mist, or particular state of the atmosphere. Loomed, pp. lômd.

LOOM: machine by which weaving is effected. The art of weaving is coeval with civilization, therefore the L. may be reckoned among the earliest of man's inventions; yet, notwithstanding its vast age, very little improvement was effected in it until the invention of Dr. Cartwright 1787, who, without ever having seen a L., constructed one to work by machine-power. In its simplest form, the L. is worked by hand; and notwithstand-the wonderful improvements which have been effected in the power-loom since its invention, many fabrics still are manufactured by hand-looms.

In India, probably the native country of the L., and where silks of almost unrivalled beauty are made, the natives continue to use this machine in its most primi-

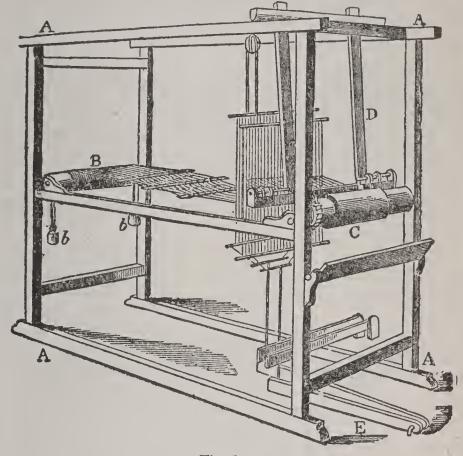


Fig. 1.

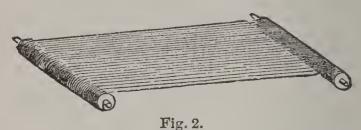
tive form; two trees growing near together form their standing frame, and a few pieces of bamboo, together with some pieces of string, furnish all they want besides.

The principle of weaving shows the work that the L. has to do. In its simplest sense, weaving consists in passing one set of threads transversely through another set, divided into two series, working alternately up and down, so as to receive the transverse threads in passing, and interlock them, forming thereby a united surface out of the threads. The L. is made to assist the weaver in this operation in the manner shown in fig. 1: AAAA is the frame, and is of no other use than to hold the working-parts in their proper position. The native of

India supplies this usually by selecting two near-growing tree-stems, usually palms, because of their straightness: these, with four stakes to support his warp, and two or three pegs to fix his heald-ropes, complete his

arrangements.

At each end of the frame, two rollers are placed, B, C, so that they will readily turn on their axes; and from one to the other, the threads of the warp are attached, and kept tight by the weights b, b. The warp-threads are wound round the roller B, which is called the beam



or yarn-roll, only as much of each thread being left unwound as will reach to the other roller, C, which is the cloth-beam, to which the ends are fastened, and upon which the cloth is wound as it is woven. The warp so stretched is seen in fig. 2.

The next step is to divide the warp-thread into two equal sets by raising up every alternate one, and inserting between them a smooth rod of wood, to prevent

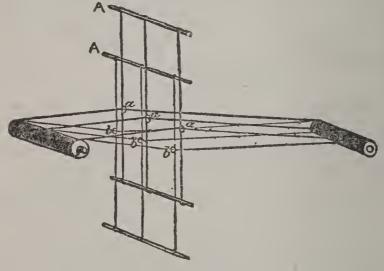


Fig. 3.

them entangling or returning to their former position. This separation takes place before the final fixing of the ends of the threads to the cloth-beam, because, previous to that, each thread must be passed through a small loop in a perpendicular thread called the heald, which hangs down from the rod A in fig. 3 (in which only six heald-threads and six warp-threads are shown, for the sake of rendering the action clearer). There are always two sets of healds in the simplest form of L., often many more; and in the case of plain weaving the threads of the warp are divided alternately by the, loops of each heald, so that if one heald is raised, it lifts every alternate thread of the warp, and if the other is depressed, it pulls down the opposite set of threads; thus, in fig. 3, the three threads of the warp are seen to pass through the three upraised threads of one heald by the loops a, a, a, and the three remaining threads of the warp pass through the depressed healds by their loops b, b, b; the united action of the two healds opens a space between the two sets of warp-threads similar to that shown in fig. 4. This space is called the shed, and through it is thrown the shuttle which carries the thread of the weft; when the weft has passed through, the healds



Fig. 4.

are reversed, and the lower warp-threads now become the upper ones. The threads, after each intersection, are driven up tight by the reed, which is a narrow frame with transverse wires set sufficiently far apart for a single thread of warp to pass through each; it hangs to the frame called the batten, fig. 1, D. The movement of the batten is produced by the hand of the weaver, while that of the healds is readily effected by the treadles E.

Many improvements have been made in this the simplest form of L., but the chief has been in replacing the weaver's hand in the necessary operation of throwing the shuttle by a mechanical arrangement. Without this, the power-loom would not have succeeded. The shuttle (fig. 5) is usually made of box or some other hard-wood; and the blunt points are covered with iron. Formerly, when used entirely by the hand, it was made much lighter and smaller than at present. Those now in use are about 12 inches in length, and rather more than an inch square in the middle. The middle part is hollowed into a small box, open on the upper side. In this box the bobbin, on



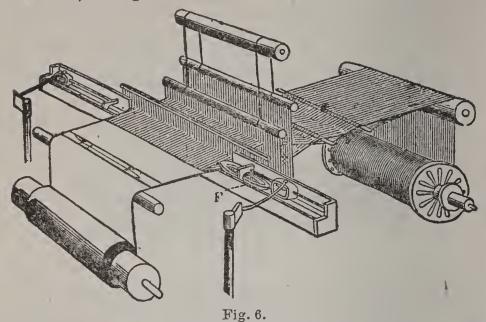
Fig. 5.

which the yarn or thread is wound, is placed, with its two ends on pivots, admitting of its being turned by the slightest strain on the yarn; the end of the yarn passes through a hole in the side of the shuttle, as seen in fig. 5; and as it is thrown forward and backward, the thread unwinds from the inclosed bobbin, and easily runs through the hole.

In the improved looms for power, and even in those still worked by hand, in special cases the arrangement for projecting the shuttle forward and backward is very

LOOMIS.

simple. On each side of the L., exactly in a line with the shed, is a groove of about 18 inches, in which the



shuttle lies free; and there is a very simple arrangement by which a piece of leather and a strap are made to act like a sling on each side; and the grooves or shuttle-races, as they are called, guide the movement with such precision that the shuttle is sent flying through the shed from side to side with unerring exactness. This arrangement is shown in fig. 6. The simplicity and compactness now attained in the power-loom, allow three to stand in the space occupied by one of the cumbrous machines formerly in use.—See Weaving.

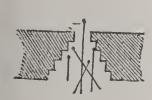
LOOMIS, lô'mĭs, Elias, ll.d.: 1811, Aug. 7—1889, Aug. 15; b. Willington, Conn.: educator. He graduated at Yale 1830; was tutor in science there 1833-36, during which time he began observing the altitude of shooting stars and the declination of the magnetic needle, and discovered the return of Halley's comet; studied in Paris 1836-37; and was prof. of mathematics and nat. philosophy in Western Reserve College 1837-44. During 1844-60 he was professor of natural philosophy in the Univ. of the City of New York, and prepared most of his well-known mathematical and astronomical text-books. In 1860 he became Munson prof. of nat. philosophy and astronomy in Yale College, where he remained till his death. He received the degree LL.D. from the Univ. of the City of New York 1854, and bequeathed his books and pamphlets relating to mathematical and physical sciences, and the bulk of his estate, estimated at \$300,000, to Yale College to aid original research in its observatory. His publications include Plane and Spherical Trignometry (1848); Progress of Astronomy (1850,56); Analytical Geometry and Calculus and Elements of Algebra (1851); Elements of Geometry and Conic Sections (1851,71); Tables of Logarithms (1855); Natural Philosophy (1858); Practical Astronomy (1855,65); Elements of Arithmetic (1863); Treatise on Meteorology (1868); and Elements of Astronomy (1869).

LOON, n. lôn [OE. loom; Icel. lómr]: arctic swimming and diving bird, allied to the grebe, but with fully webbed toes; the great northern diver: see DIVER.

LOON, Loun, and Lown, n. lôn [Dut. loen, a stupid, silly man: O.Dut. lome, slow]: a lazy, good-for-nothing fellow; a sorry fellow.

LOOP, n. lôp [Gael. lùb, a bend, a loop; lubach, crooked]: a folding or doubling of one part of a string or cord through which another part may be run for fastening; an ornamental doubling in fringes; a noosė: V. to form with loops; to fasten the loops of. Loop-ing, imp. Looped, pp. lôpt: Adj. having loops. Loopers, n. plu. lôp'erz, the caterpillars of certain moths which double up into a loop while creeping. Loopedine, a connecting line in a railway, having each end joined to the main line.

LOOPHOLE, n. lôp'hōl [Lang, loup, a small window in a roof: Dut. luipen, to peep, to lurk]: peep-hole or narrow opening in the wall of a castle whence to shoot in safety at the enemy; a small hole in the bulkhead of a ship; a secret means of escape; a hole into or through which one may slip; figuratively, evasion or shift. Loophole p, full of holes or openings.—The loophole should widen



toward the outside, that the shooter may have a sweep with his rifle; and it is of importance, on that account, so to fashion the sides that a bullet may not penetrate, unless fired straight into the centre. For this purpose, the stones are

Loophole—horizontal generally laid stepwise, as in the figure, section. although other forms are frequently resorted to. The lines in the diagram are intended to show how large a proportion of the hostile shots would prove harmless against the sharp-shooters within.

LOOPING, n. lôp'ing [Dut. loopen, to run]: the running together, or semi-fusion, of pieces of ore, when heated for calcination only.

LOOS, n. lôs [F. los, praise—from L. laus, praise]: in OE., praise.

LOOSE, a. lôs [Dut. los; O.Dut. loos, loose: Icel. lauss, loose, vacant: Goth. laus, empty]: unbound; not fastened or confined; slack; not tight or close; not dense; not precise or exact; vague; rambling; lax, as the bowels; not concise; not accurate; at liberty; wanton; inattentive: V. to untie or unbind; to release or set at liberty; to let go; to remit or absolve; to set sail. Loos'-ING, imp. Loosed, pp. lôst. Loose'Ly, ad. -lǐ, not firmly; without connection; negligently; irregularly; wantonly; dissolutely. Loose'ness, n. -nĕs, the state of being loose; slackness; the opposite of tightness or rigidness; laxity; irregularity; habitual lewdness; diarrhea. Loose-box, a compartment for horses; a stall where they are not tied. Loose Cash, small chi age of which no strict reckoning is kept. Loosestrife, n. lôs'-

strīf, a wild plant with spikes of purple flowers; the Lythrum Salīcāriă, ord. Lythrācĕæ; plant also of genus Lysimachia, and Primulaceæ. To BREAK LOOSE, to escape from confinement or restraint. To Let Loose, to set at liberty. To play fast and loose, to be so uncertain as to do, now one thing, now another and opposite one; to prevaricate.—Syn. of 'loose, a.': untied; vague; indeterminate; inaccurate; unconnected; slack; disengaged; free; remiss; dissolute; irregular; unchaste.

LOOSEN, v. lôs'n [from Loose, which see: Dut. lossen; Ger. lösen; Icel: leysa, to loosen]: to free from tightness; to render less tight or compact; to relax; to become loose. Loosening, imp. lôs'n-ĭng. Loosened, pp. lôs'nd, freed from tightness or closeness; rendered loose.

LOOT, n. lôt [Hind. lút, plunder]: in E. I., theft or plunder; plunder taken in war: V. to carry off as plunder; to ransack houses for plunder. Loot'ing, imp. Loot'ed, pp.

LOOVER, n. lôv'ér: OE. for Louver, which see.

LOO-WARM: see LUKEWARM, and note.

LOP, v. löp [It. lappare, to lop trees: Low Ger. lubben; O.Dut. luppen, to maim, to geld: Ger. laub, foliage]: to cut off, as branches from a tree; to cut off the top or extreme part; to prune: N. in OE., a branch or part cut from a tree. Lop'ping, imp.: N. the act of cutting off; that which is cut off. Lopped, pp. löpt.

LOP, a. lŏp [Fin. loppa, anything hanging or dangling: Icel. lapa, to hang loose]: dependent; hanging down. Lop-eared, having hanging ears. Lop-sided, heavier on one side than the other, as a ship; sloping at the sides.

LO'PE DE VE'GA: see VEGA-CARPIO.

LO'PEZ, Don Carlos Antonio; and Don Francisco Solano: see Paraguay.

LOPHI'ADÆ; see ANGLER.

LOPHIODON, n. lō-fī'ō-dŏn [Gr. lophos, a ridge, a crest; odous or odonta, a tooth]: in geol., extinct tapir-like pachyderm of the Tertiary epoch, having crested teeth. Its remains are found in central Europe, in the Eocene Tertiary formation. These mammals were of the family Tapiridæ, and were of very various size. See Pterodactyla: Tapir: Ungulata.

LOPHIOSTOMATE, a. $l \check{o} f' \check{i} - \check{o} s' t \check{o} - m \bar{a} t$ [Gr. lophos, a ridge, a crest; stoma, a mouth]: in bot., having crested apertures or openings. Lophophore, n. $l \check{o} f' \bar{o} - f \check{o} r$ [Gr. $phor\check{e}o$, I carry]: in zool., the disk or stage upon which the tentacles of the Polyzoa are placed.

LOPHOBRANCHIATE, a. lŏf ō-brăng kǐ-āt [Gr. lophos, a ridge, a crest; brangkĭă, gills]: having gills arranged in tufts, applied to an order of fishes, including the pipefish and sea-horse. Lophobran chii, order of osscous fishes, having the ultimate divisions of the gills not pec-

LOPHYROPODA-LORCHA.

tinated, but arranged in small tufts in pairs along the branchial arches. There is nothing like this in any other fishes. The fishes of this order are few, mostly of small size, angular form, and peculiar aspect. See Hippocampus and Pipe-fish. The gill-cover is large, and the gill-opening is a small hole. The snout is elongated and tubular.

LOPHYROPODA, n. plu. lŏf'ĭ-rŏp'ŏ-dă [Gr. lophos, a crest or tuft of hair; oura, a tail; podēs, feet]: a section of the Crustacea, embracing those which have cylindrical or conical ciliated or tufted feet.

LOQUACIOUS, a. $l\bar{o}$ - $kw\bar{a}'sh\check{u}s$ [L. loquax or $loqu\bar{a}cem$, full of words, talkative: It. and F. loquace]: given to much talking; garrulous. Loquaciousness, n. $-sh\check{u}s$ - $n\check{e}s$, or Loquacity, n. $l\bar{o}$ - $kw\check{u}s'\check{\imath}$ - $t\check{\imath}$ [F. $loquacit\acute{e}$]: the habit of excessive talking; garrulity. Loquaciously, ad. $-l\check{\imath}$.

LOQUAT, lō'kwāt (Eriobotrya Japonica): esteemed Chinese and Japanese fruit, of nat. ord. Rosacea, subord. Rosea, and of a genus closely allied to Mespilus (Medlar). It has been introduced into Australia, and is now abundant there, and is sold in large quantities, and at a cheap rate, in the markets of Sydney and other towns. The tree or shrub which produces it attains a height of 20 or 30 ft, but in cultivation is seldom allowed to exceed 12 ft. It is a beautiful evergreen, with large oblong wrinkled leaves, and white flowers in terminal wooly panicles, having a fragrance like that of hawthorn-blossom; the fruit is downy, oval, or pearshaped, yellow, and about the size of a large gooseberry. The seeds have an agreeable flavor, which they impart to tarts. The L. lives in the open air in the south of England, and produces an inferior quality of fruit.

LORAIN, *lō-rān'*: a city, Lorain co., O.; 25 m. w. of Cleveland, at the mouth of Black river—a fine harbor. It has brass-works, car-shops, planing-mills, etc., and natural gas.—Pop. (1890) 4,869; (1900) 16,028.

LORANTHA'CEÆ: see MISTLETOE.

LORATE, a. $l\bar{o}'r\bar{a}t$ [L. lorum, a thong or strap]: in bot. and zool., applied to organs or members having the form of a thong or strap.

LORCA, tōr'kà or tŏr'kà (ancient Eliocroca): town of Spain, province of Murcia, 40 m. s.w. of the city of Murcia, on the right bank of the Sangonera; picturesquely situated on an eminence crowned by a fortified castle commanding a magnificent view. Next to Murcia, L. is the most flourishing town in the province, possessing substantial houses, 8 churches, 9 monasteries, many oil and flour mills, saltpetre and powder works, lead-mines, and manufactures of cotton, etc. Pop. (1900) 69,836.

LORCHA, n. lör'chä: a light coasting vessel used in the Chinese and Eastern seas, having the hull built on a European model, but rigged like a Chinese junk.

LORD, n. lawrd [AS. hlaford; Icel. lavardr, a master, a lord: Scot. laird, a landholder, a proprietor]: one who possesses the highest power or authority; a husband; a master; a sovereign; a ruler; a baron in the British peerage; any peer of the realm: for other applications, see Lord below: an anc. name of address, as we now use 'sir, master.' Lord, the Supreme Being: V. to domineer or tyrannize; in OE., to invest with the dignity and privileges of a lord. LORD'ING, LORD'ED, pp. LORD'LY, a. -li, or LORD-LIKE, a. becoming a lord; haughty; proud; insolent; arrogant: AD. proudly; imperiously. LORD'LINESS, n. -li-nes, high station; pride; haughtiness. Lord'Ling, n. a little lord; a would-be lord. LORD'SHIP, n. a title of address to a nobleman or high officer; the territory or jurisdiction of a lord; a manor; dominion; authority. My LORD, YOUR LORDSHIP, forms of expression used in ad-THE LORD'S DAY, first day of the dressing a lord. week, or Sunday; the Christian Sabbath (see below). LORD'S SUPPER, the Holy Communion; the Eucharist (see below). Our Lord, Jesus Christ; the Savior (see Christ, The). Lord Advocate, chief law officer of the crown in Scotland (see Advocate). Lord High Chan-CELLOR, highest judicial officer of the British crown, presiding judge in the court of chancery, and speaker of the house of lords. Lord Justice-Clerk, second in rank of the two highest judges of the supreme court of Scotland. LORD LIEUTENANT, see LIEUTENANT. LORD JUSTICE-GENERAL, OF LORD PRESIDENT, highest in rank of the judges of the supreme court of Scotland. LORD ORDINARY (see COURT OF SESSION). LORD PRIVY SEAL, high officer of state in Britain, and member of the cabinet, keeper of the privy seal, whose issue to the lord chancellor is an authority to him to pass the great seal. Lords Spiritual, the archbishops and bishops having seats in the house of lords. Lords Temporal, the peers of England; 16 representatives of the Scotch, and 28 of the Irish, peerage. LORD OF THE MANOR, owner of a manor having copyhold tenants (see Manor). House of Lords, one of the constituent parts of the parliament of the United Kingdom, consisting of the Lords Spiritual and Temporal: see Parliament. -Max Müller says that AS. hlâford is from hlâf, a loaf of bread, and ord, origin, place—lord thus meaning, according to him, 'the origin or source of bread;' but Skeat says it is more likely that ord stands for weard, a warder, a keeper, a master—hence hlâf-weard, the loafkeeper, or master of the house.—SYN. of 'lordly': overbearing; imperious; tyrannical; despotic; domineering.

LORD [Anglo-Saxon hlâford—from hlâf, loaf and, probably, weard, keeper, master—i.e., master of the house]: title given in Great Britain to persons noble by birth or by royal creation. Peers of the realm are so styled, including such archbishops or bishops as are members of the house of lords, who are Lords Spiritual.

By courtesy, the title Lord is given to the eldest sons of dukes, marquises, and earls, prefixed to an inferior title of the peerage, and to the younger sons of dukes and marquises, prefixed to their Christian name and surname. The following persons bear the title lord in virtue of their employments—the Lord-lieut. of Ireland and Lordslieut. of counties (see LIEUTENANT, LORD), the Lord Chancellor (see CHANCELLOR), Lord Privy Seal, (see PRIVY SEAL), Lords of the Treasury (see TREASURY) and of the Admiralty (see ADMIRAL), the Lord High Admiral, Lord Great Chamberlain, and Lord Chamberlain (see CHAMBERLAIN, LORD), Lord High Constable (see Constable), Lord High Almoner (see Almoner), Lord High Steward (see STEWARD), Lord Steward of the Household, Lords in Waiting, Lords of the Bedchamber (see Bedchamber, Lords of the), Lords Justices (see JUSTICES, LORDS), the Lord Chief Baron of Exchequer (q.v.), the Lord Chief-Justice (see JUSTICE, LORD CHIEF), the Lord Lyon (see Lyon King-AT-ARMS), the Lord Mayor of London, York, and Dublin (see MAYOR), and the Lords Provost of Edinburgh and Glasgow (see Pro-The committee of the Scottish parliament by whom the laws to be proposed were prepared, were called Lords of the Articles. The favored beneficiaries, who, after the Scottish Reformation, obtained in temporal lordship the benefices formerly held by bishops and abbots, were called Lords of Erection. Persons to whom rights of regality were granted in Scotland (see REGAL-ITY), were termed Lords of Regality. The representative of the sovereign in the General Assembly of the Church of Scotland (see Assembly, General), is called the Lord High Commissioner. The judges of the courts of session and justiciary in Scotland have the title 'Lord' prefixed to their surname or some territorial designation assumed by them; and throughout the three kingdoms, judges are addressed 'My Lord' when presiding in court.

LORD, John, Ll.D.: lecturer: b. Portsmouth, N. H., 1812, Sep. 10. He graduated at Dartmouth College 1833, and Andover Theol. Seminary 1837; served two years as agent of the American Peace Soc.; preached in Congl. churches in New Marlborough and Stockbridge, Mass.; applied himself to historical study and lecturing 1840; spent 1843-46 in England lecturing on The Middle Ages; made his home in Stamford, Conn., 1855. Dr. L. lectured in the principal cities of the United States and England on ancient, mediæval, and modern history. He received the degree Ll.D. from the Univ. of the City of New York 1864, and was lecturer on history in Dartmouth College 1866-76. Dr. Lord published Modern History for Schools (Philadelphia 1850); The Old Roman World (1867); Ancient States and Empires (1869); and Beacon-Lights of History 11883). He d. 1894, Dec. 15.

LORD, NATHAN, D.D., LL.D.: 1793, Nov. 28-1870, Sep. 9; b. Berwick, Me. After graduating at Bowdoin Col-

lege 1809, and Andover Theol. Sem. 1815, he was pastor of the church (Congl.) at Amherst, N. H., 12 years; and was pres. of Dartmouth College 1828-63. His administration was successful, notwithstanding the exceeding distaste which many friends of the college felt for his opinions on slavery. Until he had passed 40 years of age he was classed among abolitionists; but later he publicly avowed his belief that 'slavery is an institution of God according to natural religion,' and 'a positive institution of revealed religion.' Dr. L. died at Hanover.

LORD'S DAY, THE: the first day of the week, the day on which (as recorded by all four of the Evangelists) the Lord Jesus rose again from the dead; therefore hallowed by the example of his apostles and in the usage of the church from earliest times, as the day of stated Christian assembly and public worship of God. There are differing views as to the origin of the observance of this day. It is nowhere in the Bible commanded to be sacredly observed: the fourth commandment of the Decalogue in terms applies to the seventh day. Yet its observance grew up by the side of that of the Hebrew Sabbath, not by any late and post-apostolic change, but in the practice of the apostles and of the churches under them. It was the day of stated Christian assembly: see Acts xx. 7; I Cor. xvi. 2; Rev. i. 10. The recently discovered *Teaching of the Apostles* (dating prob. A.D. 90-100) gives testimony to the same effect. The observance of this day might naturally arise, needing no positive enactment, in view of the fact that Christ's triumphal Resurrection, and his amazing and most comforting appearances to his disheartened disciples on this day, had put impressive honor on it; and that on this day, again, one week later, he appeared in the assembled company of the disciples. To this setting the day apart; above even the sacred seventh day of the vanishing Mosaic dispensation, significance must have been added by the giving of the Holy Spirit to the infant church on the Day of Pentecost which also was the first day of the week. For a long period, the old day and the new seem to have been observed side by side; but gradually the gifts of Divine Life through Christ overshadowed the Divine precept that had come only through Moses, so far at least as to give the Mosaic precept a new setting while preserving all its force and transfiguring it into higher sacredness in a new spiritual light. Thus the seventh day was slowly dropped from general Christian observance, giving place to the Lord's Day; perhaps with some remembrance of Christ's own claim when accused of dishonoring the Sabbath—that it 'was made for man,' and that he as the Son of Man was 'Lord of the

While the tendency of opinion as to the basis for observance of the Lord's Day is probably in the direction above indicated, in recent years, there are some who distinctly base its claim on the fourth commandment,

LORD'S DAY.

Standing thus on legal and Old Testament ground, they are hard-pressed in argument by Seventh-Day Baptists and others who convict them of disobeying the very command which they magnify. However, it is to be noted that the whole Christian world agrees with them in ascribing authority to the Decalogue—the authority of fundamental and universal truth though east in a provincial and transitory Hebrew mold. But the Christian world is gradually tending to seek its *final* authority whether for truth or for law, in the Son of God.

As to the mode of observing the Lord's Day, it is increasingly felt that the Day is to be received as a Gift of God, a delight and honorable—man's day of privilege for rest in both body and soul, and for refreshment in the peace of God. Thus, it is to be set apart with joy from ordinary work, but not excluding works of necessity, and even calling for works of charity. The Day as a privilege is being claimed by working-people in the United States more than was customary a few years ago. They are demanding that law shall reclaim and guard it for them. In this they have in view not its religious obligations, but its physical and social uses and blessings. There is no advocacy of any laws to enforce the religious observance of the Day: these uses of it must be trusted to win their own way to men's hearts. On the continent of Europe, judged by the British and the earlier American standard, the Day can scarcely be said to have a distinct observance.

For more full presentation on many points touched

above, see Sabbath.

The Lord's Day, in Law.—In the United States there are no general laws governing the observance of the day. The only mention of the day in the federal constitution is in Art. 1, sec. 7, where it is provided that Sunday shall not be included in the 10 days within which the pres. may return any bill to congress. In the absence of definite U. S. laws, custom has provided for the closing of congress, federal courts, and executive depts., a partial suspension of work in the post-offices, and in times of peace a cessation of ordinary daily duty in the army and navy. This custom is observed also in state and municipal govts. There has been an abundance of local legislation in the various states since the landing of the Pilgrims, intended to secure a quiet, orderly observance of Sunday, and to relieve from causes of annoyance all persons who desire to employ that day in exclusively religious worship and work. The original Sunday laws of the states have been greatly modified in recent years. In La. there are no restrictions on ordinary daily transactions, excepting in legal and financial business, and theatrical performances are given and various kinds of sporting indulged, such as horse-racing, boating, and yachting. In some of the populous n. states where balls, theatrical performances, and concerts are prohibited on Sunday, the laws provide an excuse for evading their

LORD'S DAY.

provisions, in sanctioning religious or sacred concerts. Hence, various kinds of public entertainments may be given without fear of police intervention, if the entertainment is opened with the performance of a single piece In many places public parks, where of sacred music. drinking is permitted without limitation, seaside resorts, base-ball grounds, athletic fields, boating and yachting courses, and other places of amusement, entertainment or recreation, are more crowded with people on Sundays than on week days; and this freedom is tolerated by local In legal proceedings, a verdict may be received on Sunday as on any other dies non, but a judgment cannot be entered on such verdict on the same day. cants for treason, felony, and breach of the peace may be executed on that day. It has been held legal that where public policy or the prevention of irremediable wrong requires it, the courts may sit on Sunday and issue process. Sundays are computed in the time allowed for the performance of an act, but if the last day happen to be a Sunday, it is to be excluded, and the act must in general be performed on Monday. Notes and bills, however, falling due on Sunday must be paid on Saturday. In nearly every state the constitutionality of Sunday (aws has been questioned on the ground of encroaching on personal liberty, and decisions mo and con have been rendered. Of late there is increasing tendency to laws which shall at least rescue Sunday from ordinary business and toil—making it a rest-day for working people,

LORD'S SUPPER.

LORD'S SUPPER, THE: one of the ordinances of Jesus Christ for his disciples; so called from its being instituted at the supper of the Jewish Passover by Jesus Christ, whom his disciples styled the Lord or Master. It receives also the names Eucharist and Communion (q.v.); and is very frequently called a (or even the) Sacrament (q.v.), though that term is nowhere given it in the New Testament. With the exception of the Quakers, all sects of Christians, however different their views as to its nature, agree in observing it as one of the most sacred rites of religion. The L.S. is here treated as viewed by those who admit more or less the idea of a historical development of the doctrines connected with it; for the views of Rom. Catholics, who hold that the doctrines of their church on the subject were delivered by our Lord and his apostles, and have from the first centuries been taught in substance in the church, see MASS: TRANSUBSTANTIATION: ETC.

The circumstances of sorrow amid which it was instituted, and its intimate relation to the most pathetic and impressive work of the Lord Jesus, his death, at the very outset made a deep impression on the early church. The solemnity, in conformity with the custom in its very first period, was repeated daily in conjunction with the so-called Agapæ (q.v.) (love-feasts), and was retained as a separate rite when these feasts were set aside. From the first period after the apostles there was attributed to it a peculiar efficacy; and very soon ideas of the wonderful and mystical and almost of the magical, became associated with it, which however are vainly sought in the New Testament. The L. S. was celebrated on every important occasion of life—when entering on marriage, when commemorating departed friends and martyrs, etc.; to those that could not be present at the meeting of the congregation, such as prisoners, sick persons, and children, the indispensable food of heaven was carried by the deacons, and in some churches—those of Africa, for instance—the communicants took part of the materials of the feast home with them, that on the morrow they might welcome the gift of a new day with consecrated food. Heathens also and unworthy persons were excluded from this holy mystery. As early as the 2d c., Ignatius, Justin Martyr, and Ireneus advance the opinion, that the mere bread and wine became, in the Eucharist, something higher—the earthly, something heavenly—without, however, ceasing to be bread and wine. Though these views were opposed by some eminent individual Christian teachers, such as Örigen (died 254), who took a figurative conception of the L. S., and depreciated its inherent efficacy; yet both among the people and in the ritual of the church, particularly after the 4th c., the miraculous or supernatural view of the L. S. gained ground. After the 3d c., the office of presenting the bread and wine came to be confined to the ininisters or priests. This practice arose from, and in

LORD'S SUPPER.

turn strengthened the notion which was gaining ground, that in this act of presentation by the priest, a sacrifice, which though bloodless was yet similar to that once offered up in the death of Christ, was ever anew presented to God. This still deepened the feeling of mysterious significance and importance with which the rite of the L. S. was viewed, and lead to that gradually increasing splendor of celebration which under Gregory the Great (590) took the form of the mass: see Mass. As in Christ two distinct natures, the divine and the human, were wonderfully combined, so in the Eucharist, it was claimed, there was a corresponding union of the

earthly and the heavenly.

For a long time there was no formal declaration of the mind of the church on the presence of Christ in the Eu-At length, in the first half of the 9th c., a discussion on the point was raised by the Abbot of Corvei, Paschasius Radbertus, and Ratramnus, a learned monk of the same convent; they exchanged several violent controversial writings De Sanguine et Corpore Domini, and the most distinguished men of the time took part in the discussion. Paschasius maintained that the bread and wine are, in the act of consecration, transformed by the omnipotence of God into that very body of Christ which was once born of Mary, nailed to the cross, and raised from the dead. According to this conception, nothing remains of the bread and wine but the outward form, the taste and the smell; while Ratramnus would allow only that there is some change in the bread and wine themselves, but granted that an actual transformation of their power and efficacy takes place. The greater accordance of the first view with the credulity of the age, with its love of the wonderful and magical, as well as with the natural desire for the utmost possible nearness to Christ, in order to be unfailingly saved by him, the interest of the priesthood to add lustre to a rite which enhanced their own office, and the apparently logical character of the inference, that where the power, according to universal admission, was changed, there must be a change also of the substance—the result of all these concurring influences was, that when the views of Ratramnus were in substance revived by Berengarius, Canon of Tours, in opposition to Lanfranc, Bp. of Canterbury, and Cardinal Humbert, the doctrine of Transubstantiation, as it came to be called, triumphed, and was officially approved by the Council of Rome 1079. In the fourth Lateran Council at Rome, 1215, under Innocent III., Transubstantiation was declared an article of faith; and it has continued to be so held by the Rom. Cath. Church to the present day. The Greek Cath. Church sanctioned the same view of Transubstantiation at the Synod of Jerusalem 1672.

The Reformation of the 16th c. again raised the question on the nature of the Eucharist. The Lutheran Church rejected from the first the Rom. Cath. doctrine

LORD'S SUPPER.

of Transubstantiation, as well as of the mass, i.e., the constant renewal of the sacrifice of Christ, and taught merely that, through the power of God, and in a way not to be explained, the body and blood of Christ are present in, with, and under the unchanged bread and wine. In opposition to this doctrine, it was laid down by Zwingli, that the L. S. is a mere commemoration of the death of Christ, and a profession of belonging to his church, the bread and wine being only symbols: a view which is adopted in substance by the Socinians, Arminians, and German Catholics. Luther bitterly opposed this symbolical view, especially toward the latter part of his career; Zwingli's doctrine was more repugnant to him than the deeper and more mystic Rom. Cath. doctrine: see Impanation.

Calvin sought to strike a middle course, which substantially has been followed by the Reformed churches. According to him, the body of Christ is not actually present in the bread and wine, which he also holds to be mere symbols. But the 'faithful' receiver is, at the moment of partaking, brought into union with Christ, through the medium of the Holy Spirit, and receives of that heavenly power (efficacy) which is always emanating from his glorified body in heaven. Melanchthon, in this controversy, was inclined to the views of Calvin; but he thought a union might be effected by adopting the declaration that Christ in the Eucharist is 'truly and really' present (not merely in faith). The endeavors of Melanchthon and his party, by arbitrary alterations of the Augsburg Confession and other means, to effect a public reconciliation, served only to rouse among the partisans of Luther a furious theological storm, and the result was the establishment of the peculiar views of Lnther, and the final separation of the Lutheran and Reformed churches.

The whole controversy relates to the mode in which the body and blood of Christ are present in the Lord's Supper; for it was agreed on all sides that they are present in some way. The Reformed theologians argued that presence is a relative term, opposed not to distance, but to absence; and that presence in this case, does not mean local nearness, but presence in efficacy. Here they parted company both with the Rom. Cath. Church and with the Lutherans. They were willing to call this presence 'real' ('if they want words,' as Zwingli said,) meaning true and efficacious, but they would not admit corporal or essential presence. while the Reformed churches were at one in holding, that by receiving the body and blood of Christ, is meant, receiving their virtue and efficacy, there is some difference in their way of expressing what that efficacy Some said it was their efficacy as broken and shed —i.e., their sacrificial efficacy; others, in addition to this, speak of a mysterious supernatural efficacy flowing from the glorified body of Christ.

:1

LORD'S SUPPER.

The Reformed churches mostly formed their Confessions on this point for the express purpose of compromise, to avoid a breach with the Lutherans. Hence the language of these Confessions contains more of the mystical element, than the framers of them seem, in other parts of their writings, to favor. And it is remarkable that the Anglican Confessions, framed under different circumstances, lean more to the symbolical view of Zwingli than those of any other of the Reformed churches. The Thirty-nine Articles, after laying down that 'to such as with faith receive the same, it is a partaking of the body of Christ,' repudiate the notion of Transubstantiation; and add: 'The body of Christ is given, taken, and eaten in the Supper only after a heavenly and spiritual manner. And the mean whereby the body of Christ is received and eaten in the Supper is faith.'

The Presb. Church of Scotland adopted substantially the views of Calvin. The words of the Westminster Confession are: 'That doctrine which maintains a change of the substance of bread and wine into the substance of Christ's body and blood (commonly called Transubstantiation) by consecration of a priest, or by any other way, is repugnant not to scripture alone, but even to common sense and reason. . . . Worthy receivers, outwardly partaking of the visible elements in this sacrament, do then also inwardly by faith, really and indeed, yet not carnally and corporally, but spiritually, receive and feed upon Christ crucified, and all benefits of his death: the body and blood of Christ being then not corporally or carnally in, with, or under the bread and wine; yet as really, but spiritually, present to the faith of believers in that ordinance, as the elements themselves are to their outward

senses.

This variety of dogmatical opinion as to the Eucharist naturally gave rise to variety in the ceremonials of its The Rom. Cath. notion of a mysterious transformation, produced the dread of allowing any of the bread and wine to drop, and led to the substitution of wafers (hostiæ, oblatæ) for the breaking of bread. doctrine of the 'real union,' which declares that in the bread as well as in the wine, in each singly and by itself, Christ entire is present and tasted—a doctrine which was attested by wafers visibly bleeding—caused the cup to be gradually withdrawn from the laity and non-officiating priests; this practice was first authoritatively sanctioned at the Council of Constance, 1415. All the Reformed churches restored the cup: in the Greek Church it had never been given. It is universally conceded that in the first period of the church both the cup and the bread were administered to all communicants. venience in the frequent carrying of the elements to the homes of the sick, it became customary to dip the bread in the wine—thus administering both in one. Later, to avoid the danger of spilling such mysteriously sacred

LORD'S SUPPER.

material, it was deemed prudent to omit the wine, on the principle of Transubstantiation—that the whole Christ, body, soul, and divinity, is present in every particle of both the bread and the wine, so that whosoever partakes of one has all the benefits of both. Since the Council of Trent (1563) this has been the law for the Rom. Cath. Church, though some liberty has been granted to certain classes of converts from the Greek and the Prot. churches. From the same feeling of deep reverence for the Eucharist, the communion of children was gradually discontinued after the 12th c.: the Greek Church alone retains the practice. Grounded on the doctrine of Transubstantiation, the Greek and Rom. Cath. Churches hold the 'elevation of the host' (hostia, victim or sacrifice) to be a symbol of the exaltation of Christ from the state of humiliation; connected with this is the 'adoration of the host,' and the carrying it about in solemn procession. The use of leavened bread in the Greek Church, and of unleavened in the Rom. Cath. and Lutheran, of water mixed with wine in the Rom. Cath. and Greek Churches, and of unmixed wine in the Prot. Churches, are trifling differences, originating mostly in accidental circumstances; yet, once magnified into importance by symbolical explanations, they have given occasion to hot The greater part of the Reformed controversies. churches agree in breaking the bread and letting the communicants take it with the hand (not with mouth); and this practice is owing to the original tendency of those churches to the symbolical conception of the Eucharist, in which the breaking of the bread and the pouring out of the wine are essential elements.

Although the great divisions of the Christian world have continued as churches to adhere to those doctrines about the L. S. which were fixed and stereotyped in Acts of Council and Articles and Confessions about the time of the Reformation, it is not at all to be supposed that the opinions of individuals within those churches continue equally uniform and fixed. Even Rom. Cath. theologians, like Bossuet, have sometimes endeavored to understand the doctrine of the church in a philosophical sense; and in the Lutheran Church, the greatest variety of opinion prevails. Some uphold unmodified the dogmas of Luther; others accept them with explanation; Hegel even undertook to ground them on speculative reason. Others, as Schleiermacher, would have recourse to the views of Calvin as a means of reconciliation with the Reformed churches. Even all 'supernatural theologians do not adhere strictly to the formulas of the church; while rationalism in all its phases

tends to the pure symbolism of Zwingli.

The Anglican Church is divided on this, as on several kindred topics, into two parties: with one, the symbolical view of the rite is predominant; the other party reprobate this view as 'low,' and maintain an objective 'mystical presence' of the thing signified, together with

LORE-LORETO.

the sign. Notwithstanding the 'higher' doctrine of the Scotch Confession, the tendency in Scotland seems to be more the other way; from the pulpit, the rite is oftener spoken of in its commemorative character, and the signs as means of working upon the mind and feelings subjectively, than as the vehicle of any objective, mystically operating grace. As to the Prot. Churches in the United States, the Prot. Episc. Church probably tends to a heightening view of the 'objective mystical presence; while other denominations either frame their thought into no settled opinion on the subject, or tend to lower their view to the symbolical. Most of the Baptists, and some Congregationalists, do not term the L. S. a 'sacrament,' deeming that name unauthorized in Scripture: they term it an Ordinance or Institution of Jesus Christ. The Lutheran Church, however, gives no signs of wavering from its confessional standard.

LORE, n. lōr [AS. lar, teaching: Icel. lær; Dan. läre; Ger. lehre, lore]: learning; erudition; instruction; in OE., workmanship. Loring, n. lōr'ĭng, in OE., instructive discourse.

LORE, n. lor [L. lorum, a strap or thong]: in birds, the space between the bill and the eye; a corneous angular apparatus observable in the mouths of certain insects.

LOREL, n. lŏr'ĕl [Gael. lobhar, a leper, a disgusting creature]: in OE., a base or worthless person; a rogue; connected with LOAFER: see another spelling in LoseL.

LORE'LEI: see LURLEI.

LORETO, lō-rā'tō, or Loretto, lō-rĕt'tō: city of the province of Ancona, kingdom of Italy; pop. 5,300. Though of some architectural pretensions, it is notable chiefly as the site of the celebrated sanctuary of the Blessed Virgin Mary, called the Santa Casa, or Holy The Santa Casa is reputed to be the house, or a portion of the house, in which the Virgin lived in Nazareth, which was the scene of the Annunciation, of the Nativity, and of the residence of the Lord Jesus with his mother and Joseph; and which, after the Holy Land had been finally abandoned to the infidel on the failure of the Crusades, is believed to have been miraculously carried by angels through the air, first, 1291, to Fiume in Dalmatia, thence, 1294, Dec. 10, to Recanati, whence it was finally transferred to its present site. Its name (Lat. Domus Lauretana) is derived from Laureta, the lady to whom the site belonged. Although numberless pilgrims resort to the sanctuary, and although indulgences have been attached by Julius II., Sixtus V., and Innocent XII. to the pilgrimages, and to the prayers offered at the shrine; yet the truth of the legend is no part of Catholic belief, and Rom. Catholics claim to hold themselves free to examine critically its truth, and to admit or to reject it according to the rules of historical evidence. The church of the Santa Casa stands near the centre of the town, in a piazza which possesses other

LORGNETTES-L'ORIENT.

architectural attractions, the chief of which are the governor's palace, built from the designs of Bramante, and a fine bronze statue of Pope Sixtus V. The great central door of the church is surmounted by a splendid bronze statue of the Madonna; and in the interior are three magnificent bronze doors filled with bas-reliefs, representing the principal events of scriptural and ecclesiastical history. The celebrated Holy House stands within. It is a small brick-house, with one door and one window, originally of rude material and construction, but now, from the devotion of successive generations, a marvel of art and of costliness. It is entirely cased with white marble, exquisitely sculptured, after Bramante's designs, by Sansovino, Bandinelli, Giovanni Bolognese, and other eminent artists. The subjects of the bas-reliefs are from the history of the Virgin Mary in relation to the mystery of the Incarnation, e.g., the Annunciation, the Visitation, the Nativity-with the exception of three on the e. side mainly referring to the legend of the Holy House itself and of its translation. The rest of the interior of the church is rich with basreliefs, mosaics, frescoes, paintings, and carvings in bronze. Of this material, the finest work is the font, a master-piece of art. The Holy House having been at all times an object of devout veneration, its treasury of votive offerings is one of the richest in the western world. It suffered severely in the French occupation of 1796, but it has since received numerous and most costly ac-The frescoes of the Treasury Chapel are among the finest outside of Rome.

LORGNETTES, n. plu. lörn-yĕts' [F. lorgnette, an opera-glass—from lorgner, to glance at]: double eye-glasses of an expensive kind, opening with a spring—chiefly used by ladies; small opera-glasses.

LORICATE, v. lŏr'ĭ-kāt [L. loricātus, covered with a breastplate of metal—from lorīcă, a coat of mail]: to cover with a coat of mail; to plate over; to cover with a crustor coating. Loricating, imp. Loricated, pp.: Add. covered or clad with horny or bony plates or scutes, like the crocodile; incrusted. Lorication, n. -kā'shăn, the operation of covering anything with a plate or crust for defense, as against the action of fire. Loricata, n. plu. lŏr'ĭ-kā'tă, those reptiles which, like the crocodile, have bony plates developed in their skin. Lorica, n. lō-rī'kă or lŏr'ī-kā, applied to the protective case with which certain infusoria are provided.

L'ORIENT, lō-rē-ŏng': seaport of France, dept. of Morbihan, at the confluence of the Scorff and Blavet, lat. 47° 48′ n., and long. 3° 25′ w. It is a well-built town, bur rather dull-looking. The harbor, dockyard, and arsenal are among the best and largest in France, and the place ranks as a fortress of the third class; but its commerce received a blow at the Revolution in 1789, from which it has never recovered. L. has a communal college, a

LORIKEET-LORING.

school of navigation, and another of marine artillery. The inhabitants are engaged chiefly in ship-building and the allied occupations. The only important manufacture is that of hats. L. owes its origin to the French E. India Company, which built an establishment here in 1666, for the purpose of trading to the East (whence the name of the town). Pop. (1891) 42,116; (1901) 44,640.

LORIKEET, lor'i-ket [see Lory]: name of various Australian parrots, genera of ord. Psittaci, of most brilliant scarlet or crimson plumage; gregarious, and flying in immense flocks. The papillæ of their tongues are developed into bristly hairs with which they gather honey from flowers. They are found also in the Eastern

Archipelago.

LORIMER, lor'i-mer [Fr. lormier—from Lat. lorum, a thong]: maker of bits, spurs, stirrup-irons, metal mountings for saddles and bridles, and generally of all articles of horse furniture. In London, the lorimers, who had previously formed part of another guild, were incorporated by letters-patent 1712; in the Scottish burghs, they have been comprehended as a branch of the corporation of Hammermen. Cutlers, locksmiths, and brass-founders have been considered as in the exercise of branches of the L.'s art.

LORIMER, lawr'e-mer, George Claud, D.D.: Baptist minister: b. 1837. His father died when L. was very young, and he was brought up by his step-father, who was connected with the theatrical profession in Edinburgh. L. attended school in that city but afterward went to sea. Returning, he became assistant stagemanager at the Queen's Theatre, Dublin. He was very studious, and cultivated a knowledge of the classics. He came to America 1855 and played in Louisville, Ky. Then, at the age of 18, becoming a Christian convert, he left the stage, joined a Bapt. church, entered on a collegiate course at Georgetown, Ky., and received the degree A.M., and later D.D. from Bethel College. He was ordained at Harrodsburg, Ky., 1859, taking charge of a church at Paduca the next year. Afterward he was called to the Walnut Street Church, Louisville, Ky. In 1868 he removed to Albany, N. Y., and after two years, to the Shawmut Ave. Bapt. Ch., Boston, where he drew large audiences. Soon afterward he took charge of the Tremont Temple Baptist Church in Boston, and remained there six years, at the same time being associate editor of the Watchman. He was called to the First Bapt. Church, Chicago, 1879; after about twelve years' service there he was recalled to Tremont Temple, and in 1901 went to the Madison Avenue Baptist Church, New York.

LORING: see under Lore 1.

LO'RING, GEORGE BAILEY, M.D.: agriculturist: b. North Andover, Mass., 1817, Nov. 8. He graduated at Harvard 1838, and at its medical school 1842; was surgeon to the Chelsea Marine Hospital 1843-50; commis-

LORIOT-LORIS.

sioner to revise the U. S. marine hospital system 1849; postmaster at Salem, Mass., 1853–57; delegate to the national republican conventions 1868,72,76; chairman Mass. republican committee 1869–76; U. S. centennial commissioner 1872–76; pres. of the Mass. senate 1873–77; member of congress 1876–81; and U. S. commissioner of agriculture 1881–85. He had been pres. of the New England Agricultural Soc. since 1864, and was widely known as an orator. His notable addresses comprise those at the dedication of memorial tablets at Bolton, Mass. (1866); bi-centennial celebration of the settlement of Dunstable (1873), and of Sherborn (1874); anniversary of the massacre at Swanzey (1875); centennial of resistance to the British at the n. bridge, Salem (1875); Relation of Agriculture to the State in Time of War (1862); Classical Culture (1866); Eulogy on Louis Agassiz (1873); The Cobden Club and the American Farmer (1880); and the address at the national cotton convention at Atlanta (1881). He also was a frequent contributor to leading agricultural publications. He died Sept. 14, 1891.

LORIOT, n. lŏr'ĭ-ŏt [F. loriot—from OF. loriol and oriol—from L. aurĕŏlŭs, golden—from aurum, gold]: the yellow gold-colored bird; a bird called witwall; the oriole: see WITWALL.

LORIS, n. lō'rĭs [loris or lori, native Indian name]: genus of Lemuridæ, differing from the true lemurs in having a round head and short muzzle, very large eyes, and no tail. The two species known are natives of the E. Indies. The largest species, L. tardigradus, is not so large as a cat; the other, L. gracilis, is much smaller.



Loris (L. gracilis).

They are nocturnal animals, and spend the day generally sleeping attached to a branch, which they grasp firmly with all their four hands, the body rolled up into a ball, and the head hidden among the legs, thus gaining the

LORIS-MELIKOFF-LORY.

popular name 'lazy monkey.' Their fur is rich and soft. Their motions are slow, and they advance stealth ily and noiselessly on the insects and birds on which they prey. They feed partly on fruits and other vegetable food; in confinement, they readily eat rice and milk, and are very fond of eggs.

LORIS-MEL'IKOFF: see Melikoff.

LORNE, lawrn, Sir John George Edward Henry Douglas Sutherland Campbell, Courtesy Marquis of: b. 1845; eldest son of the Duke of Argyll. In 1868, he was a member of parliament. In 1871 he married Louise, fourth daughter of Queen Victoria. He was appointed gov.gen. of Canada, 1878, and held that office till 1883. He is author of A Trip to the Tropics, 1867; Guido and Lita, 1875; and of a versification of the Psalms, 1877.

LORRAINE, lawr-rān', or Lothringen, löt'ring-en, or LOTHARIN'GIA: originally a portion of the German empire. Its history dates from 855, when Lotharius II. obtained (see Carlovingians) the lands between the Scheldt, Rhine, Meuse, and Saône, called the Kingdom of Lotharius (Lotharii Regnum), or Lotharingia, or Lor-The district now known as Rhenish Prussia was separated from L. in the 10th c., and the remainder was divided 1044 into two duchies, Upper and Lower Lor-Lower L. after many viscissitudes, came into the possession of Austria, and now forms one half of the kingdom of Belgium, and the provinces of Brabant and Gelderland, in Holland. Upper L. continued to be governed by its own dukes till 1736, when it was given to Stanislas, ex-king of Poland, and on his death, 1766 was united to France. It was afterward subdivided into the depts. of the Meuse, Moselle, Meurthe, and Vosges. The inhabitants are of German origin, but speak the French language, with the exception of the district lying between Metz and the Vosges, which is called German Lorraine. This tract with Alsace was ceded to Germany at the peace of 1871: see Alsace-Lorraine.

LORRAINE' GLASS [see CLAUDE LORRAINE]: tinted glass, supposed to give the coloring of Claude Lorraine's landscapes to objects viewed through it.—Opticians apply the term to a glass plate peculiarly ground and coated with a polished black composition, and so mounted as to reflect a landscape which can then be depicted from the image in the glass.

LORRY, n. lör'ri: a four-wheeled wagon without sides, for the carriage of heavy or bulky goods; a coal-truck.

LORY, n. lō'rĭ [Hind. luri, a parrot], (Lorius): genus of birds of the parrot family (Psittacidæ), natives chiefly of s.e. Asia and the E. Archipelago. They have a dense soft plumage, exhibiting the most rich and mellow colors; the tail is rounded or graduated, generally not long; the bill is feebler than in many of the parrots, and the upper mandible much arched. They are very active

LOS ANGELES.

and lively even in confinement, and are also of very gentle and affectionate disposition. Red, scarlet, crimson, and yellow are prevailing colors of their plumage; but the name L. is often extended to some Australian birds of the same family, in which much more of a green color appears, and which have a stronger bill and a much less gentle disposition. The true lories feed much on the softest and most juicy fruits; the Australian birds plunder maize-fields. Recent discoveries seem to show that, of one genus of L., the birds with red plumage are the females of those with green.

LOS ANGELES, los ăn'jeh-les, Sp., an'chā-las: city, cap. of Los Angeles co., of Cal.; on the Los Angeles (formerly Porciúncula) river, and on the Southern Pacific and the Atlantic and Pacific railroads; 482 m. s.s.e. of San Francisco; 36 sq. m. It is in a large and fertile plain, particularly adapted to cultivation of grapes, oranges, and semi-tropical and temperate zone fruits, and has a delightfully stimulating and equable climate. Its growth within the past few years has been remarkable, many families being attracted to it as a place of permanent residence on account of its climate and charming surroundings; and hundreds of invalids from the n. living there during the winter months. The ocean is 30 m. distant by river, and its port, Wilmington, where the steamers of the Pacific Coast Steamship Company touch regularly, is 22 m. s., and is reached by a branch railroad. The city is beautifully laid out, surrounded by extensive vineyards and orange groves, has valuable veins of silver and other minerals in its limits and suburbs, carries on a large interior trade, and through its port has mercantile intercourse with all maritime countries. It is lighted by gas and electricity; has costly systems of waterworks and sewage, paid fire dept., efficient board of trade and produce exchange; and 6 lines of street railroad, horse, cable, and electric. There are 6 public parks; 7 cemeteries; 3 hospitals; 2 orphan asylums; 31 churches; 20 high, grammar, and graded public schools; public library; 6 nat. banks (cap. \$1,800,000), 9 state banks (cap. \$1,319,500) 2 sav. banks (cap. \$45,000), and 1 private bank; 3 theatres; 4 daily and 7 weekly papers in English, Spanish, French, and German; and the only magnetic observatory in the country w. of the Mississippi river. The city is the seat of the Rom. Cath. bp. of Monterey and Los Angeles, and contains the Rom. Cath. college of St. Vincent, the Univ. of S. Cal., a Rom. Cath. seminary under charge of the sisters of charity, and a branch of the state normal school. The industries comprise 10 foundries and ironworks, 5 flour-mills, 10 planing-mills, 1 woolen mill, 12 wine-making establishments, 8 distilleries, and several canning and other factories. The net public debt (1903) was \$3,265,700, assessed real and personal property valuations \$86,416,735; tax rate \$1.20.—L. A. was founded by 12 families of Indian, negro, and mixed blood, under

LOSE-LOSSING.

the protection of the viceroy of Mexico 1781, Sep. 4. The patron in religion was Nuestra Señora la Reine de los Angeles, whence it receives its early name Pueblo de los Angeles. When the gold fever first broke out in Cal., L. A. was the largest, best built, and most important town in Alta Cal. The adobe houses and nearly every trace of the early Spanish occupation have disappeared, and the old city that for years alternated with Monterey in being the capital of the province of Cal. is now a pushing, prosperous metropolis. Pop. (1880) 11,183; (1900) 102,479.

LOSE, v. lôz [AS. lesan; Goth. fra-liusan; Dut. verliezen, to lose]: to mislay; to lay or drop so as not to be able to find; not to gain or win; to be deprived of; to fail to obtain; to miss; to wander from; to bewilder; to waste, as time; to go from view or knowledge; to squander or throw away; to ruin or destroy; not to employ or enjoy; to suffer loss; in OE., to decline; to fail. Lo'sing, imp.: Adj. causing or bringing loss: N. loss. Lost, pt. pp. löst, did lose: Adj. laid or dropped so as not to be able to find or recover; gone from our possession or view; not visible; mislaid; that cannot be found; unable to find; destroyed; perished; ruined; wasted; no longer possessing or existing; bewildered; perplexed; alienated; hardened. Loser, n. lô'zer, one who is deprived of anything, as by defeat, etc.; one who fails to gain in a transaction. Lo'singly, ad. -li. To lose ground, to fall behind; to suffer gradual loss. To Lose HEART, to become timid or discouraged. To lose one's self, to become bewildered; to miss or be ignorant of one's way.

LOSEL, n. $l\bar{o}z'\bar{e}l$ [see Lorel]: in OE., a scoundrel; a worthless fellow.

LOS HERRE'ROS: see Breton de los Herreros.

LOSS, n. lös [from Lose, which see]: deprivation; destruction; injury; defeat; failure; waste; leakage; that which is lost. At a loss, puzzled; perplexed. To BEAR A loss, to make it good; to endure with resignation.—Syn. of 'loss': detriment; privation; miss; forfeiture; damage; disadvantage.

LOSSING, laws'ing, Benson John, Ll.D.: author: be Beekman, Dutchess co., N. Y., 1813, Feb. 12. He was apprenticed to the watchmaker's trade when a boy, entered journalism in Poughkeepsie, learned wood engraving, and became editor and illustrator of the Family Magazine 1838. Soon afterward he established himself as an engraver on wood in New York. In 1848 he began work on his Pictorial Field-Book of the Revolution, and has since been very active in historical writing. He received the degree Ll.D. from Mich. Univ. 1873. His publications, among which are many of great value, include Pictorial Field-Book of the Revolution (1850-52); The Hudson, from the Wilderness to the Sea. (1266); Pic-

LOSSINI-LOST TRIBES.

torial Field-Book of the Civil War in the United States, 3 vols. (1866-69); Pictorial Field-Book of the War of 1812 (1868); Our Country (1873); The American Centenary (1876); Cyclopædia of United States History (1881); History of New York City (1884); Mary and Martha Washington (1866); Two Spies: Nathan Hale and John André (1886); The Empire State, a Compendious History of the Commonwealth of New York (1887); and contributions to Our Great Continent (1890). He also published Lives of the Presidents of the United States (1847); Lives of the Signers of the Declaration of Independence (1848); Biographies of Eminent Americans (1855); and numerous separate lives, memoirs, and histories. He died June 3, 1891.

LOSSINI, lŏs-sē'nē (Ger. Lussin): island in the Gulf of Quarnero, Adriatic Sea; length, 21 m.; breadth, 1 to 3 m. The principal place on the island is L. Piccolo, or Little L., with 7,700 inhabitants, a fine harbor, and an active trade.

LOSS OF SPEECH: see APHASIA.

LOST: see under Lose.

LOST PROPERTY, in Law: differently dealt with by statutes of different states; but mostly on the principles following: The finder of L. P. is entitled to keep it until the owner is found; but there are certain circumstances in which the keeping of it will be construed by a jury to amount to larceny. The rule which seems to be laid down in recent cases in England is, that if the finder find the property in such circumstances that he either knows the owner, or has ready means of discovering him, then the taking of the property with intent to keep it will be larceny; e.g., if a servant find a sovereign in her master's house, and keep it, that would be larceny. So it was held to be larceny where the prompter on the stage of a theatre picked up a £50 note which had been dropped by one of the actors. On the other hand, if there be no reasonable probability of ever discovering the true owner, then there is no larceny. It has also been decided that the mere keeping of a lost article, in hopes of getting a reward for giving it up, and though the owner be known, does not amount to larceny. There is also no legal obligation on the finder of L. P. to incur expense for advertising for the owner; indeed, the owner would not be bound under all systems of statutes to repay such expense; and it is to be borne in mind that the real owner is not divested of his property by the loss, but can demand it from whosoever is in possession of it. But in some places there are peculiarities on this subject, as regards lost bills of exchange and notes, which, though originally lost, yet, if transferred without notice, become the property of the transferee. Moreover, the loser of a bill or note payable to bearer cannot sue the party liable, at least without giving an indemnity.

LOST TRIBES of ISRAEL: see BABYLONIAN CAPTIVITY.

LOT, n. löt [AS. hlot; Goth. hlauts, lot: Dut. lot, a lot; loten, to east lots: Icel. hlutr, lot, hluti, portion, hljóta, to obtain by lot]: that which falls to any one as his fortune; fate; fortune; chance; anything used in determining chances, as to cast or draw lots; a parcel; a piece or division of land; familiarly, collection, as, they are a sorry lot; abundance, as, we have a lot of money: V. to sort in lots; to catalogue. Lot'TING, imp. Lot'TED, pp. A GREAT LOT, a great quantity. To CAST LOTS, to use or throw a die, or to employ other means of so called chance, in order to determine an event; a prevalent custom among all nations of the ancient world—among the heathen with no reference higher than a supposed luck or chance; among the Hebrews with a reference, theoretic at least, to the decision by God; in the choice of one of the apostles, accompanied with prayer for God's direction of the result (Acts i. 23-26). To DRAW LOTS, to determine a matter by drawing one from two or more things, marked with symbols agreed upon, but which are concealed from the drawer while drawing. SCOT AND LOT [AS. scot, payment]: to pay taxes according to share or proportion. Note.—Gael. lod, 'a quantity, a crowd,' is suggested as the etymology of Lot, 'a collection, abundance': see Load, note 2.—Syn. of 'lot, n.': destiny; doom; hazard; accident; quantity; portion.

LOT, *lŏt* (ancient *Oltis*): river of s. France, one of the largest tributaries of the Garonne, rising at Mount Lozère, in the Cevennes, flowing generally w. through the depts. of Lozère, Aveyron, Lot, and Lot-et-Garonne, joining the Garonne at Aiguillon, after a course of 270 m. It is navigable for about 170 m. withthe help of locks.

LOT, löt: department in s. France, formed out of the province of Guienne, and comprising the arrondissements of Cahors, Gourdon, and Figeac; watered by the Dordogne, and the Lot, with its tributary, the Sellé; 2,005 sq. m. A range of hills, broad, but not high, and containing some iron, runs through the centre of the dept. from e. to w. in a semi-circle. The valleys yield corn, hemp, tobacco, and fruits, and the hillsides are clothed with vines. Flax-mills are numerous. Cap. Cahors (q.v.).—Pop. of L. (1891) 253,885; (1901) 226,720.

LOT: nephew of the patriarch Abraham, and son of Haran: see Gen. xi.—xix. Lot is the type of a class of well-meaning but morally weak men, seeking selfish advantage through compromises with evil which brought him almost to destruction in the awful catastrophe of

the wicked cities of the plain.

LOTE, n. lōt, or Lotus, n. lō'tŭs [Gr. lotos; L. lotus; It. loto, lotus]: genus of leguminous creeping plants, found in different countries, and of several species, ord. Leguminōsæ, sub-ord. Papiliōnācĕæ; an Egyptian waterplant—considered sacred by the Egyptians; a small tree: the true lotus or lote-bush of the classics is Ziz'yphus lōtus, ord. Rhamnācĕæ: see Lotus.

LOT-ET-GARONNE-LOTION.

LOT-ET-GARONNE, löt-ā-gâ-rön': department in the s.w. of France, formed out of the province of Guienne, and comprising the arrondissements of Agen, Villeneuve, Marmande, and Nérac; watered principally by the Garonne and the Lot; 2,060 sq. m. Among the people are a considerable number of French Protestants. The department is level, except in the s., where spurs of the Pyrenees make their appearance, and extremely fertile in the basins of the large rivers; but the e. is chiefly barren wastes, and the s.w. is largely a region of sandy and marshy tracts termed Landes (q.v.). The principal products are corn, wine, excellent hemp, fruits (of which the prunes d'entes of Agen are particularly celebrated), tobacco (considered the best manufactured in France), anise, and coriander. Pine, cork, and chestnut woods are numerous; domestic animals, especially poultry, are reared in great numbers for exportation. The chief metal is iron, and the dept. has ten ironworks, besides various manufac. Pop. (1891) 295,360; (1901) 278,740.

LOTH: a. lōth: an OE. spelling of LOATH: see LOATHE.

LOTHARIN'GIA: see LORRAINE.

LO'THIANS: see Scotland.

LOTHROP, Thomas: d. 1675, Sep. 29; b. England: soldier. He was a freeman in Salem, Mass., 1634; member of the general court 1647,53, and 64; removed to Beverly and aided in establishing a church there; represented the town in the general court four years; became capt. of miltia at the beginning of King Philip's war; fought a battle with the Indians near Hadley 1675, Aug.; and Sep. 29 was surprised by the Indians at Bloody Brook near Deerfield, and with all but eight of his men massacred. In 1838 a memorial monument was erected over the remains of L. and his 89 companions.

LOTION, n. lŏ'shŭn [F. lotion—from L. lotĭōnem, a washing]: medicated solution or watery mixture for external use; a medicinal wash. Lotions are liquid, but not oily, and are applied to circumscribed portions of the surface of the body. Among common lotions are the muriate of ammonia wash, solution of sal ammoniac in water or in vinegar with or without the addition of spirit; much used in contusions, where there is no wound of the skin, in chronic tumors, in enlarged joints, Chloride of soda wash, solution of chlorinated soda diluted with 10 to 20 times its volume of water; useful as a gargle in ulceration of the mouth and throat, and as a wash for foul ulcers generally. Chloride of lime wash, one or two drachms (or more) of chloride of lime in a pint of water, used for the same purposes as the preceding wash. Black wash, prepared by adding calomel to lime-water (generally a drachm of the former to a pint of the latter) extensively used in venereal sores, and of service in many forms of intractable ulcers.

LOTO-LOTTERY.

LOTO, n. lō'tō [F. loto—from It. lotto, a lot, a lottery: comp. It. loto, the Egyptian water-lily]: arithmetical game played with 24 numbered cards, wooden disks with corresponding numbers, and some counters.

LOTOPHAGI, lō-tŏf'a-jī [Gr. lotos, lotus; phagō, I eat]: lotus-eaters; name applied by the ancients to a peaceful and hospitable people inhabiting a district of Cyrenaica, on the n. coast of Africa, and much depending for their subsistence on the fruit of the lotus-tree, from which they also made wine. According to Homer, they received Ulysses hospitably, when, in his wanderings, he visited them, though on his companions, the sweetness of the lotus-fruit exercised such an influence, that they forgot their native country, and had no desire to return home. This happy languor has been expressed with marvellous felicity by Tennyson in his poem on the Lotus-eaters.

LOTTERY, n. lŏt'tėr-ĭ [Eng. lot, chance: It. lotteria, a lottery': comp. F. loterie—from lot, a portion: Sp. loteria, a lottery]: distribution of money or goods by chance or lot; the name of the distribution; a card game; in OE., allotment. Usually a L., as a distribution in which prizes are drawn by lot, comprises a specified quantity of tickets, each numbered, every ticket-holder having a right to draw from a box a prize or blank, as the case may happen to be, and thus gain or lose. Lotteries are, of course, arranged for the sake of profit to their proprietors; for the aggregate sum expended in prizes always falls short of the aggregate purchase-money for tickets. Whatever be the actual form of the L., it is indisputably a gambling transaction, the risks and losses of which are now acknowledged to be demoralizing. Lotteries are said to have been employed first by the Genoese government as a means of adding to the revenue of the country, and the bad example was soon followed by governments of other nations. The first L. in England appears to have been in 1569, and the profits went to the repair of harbors and other public works. same means was frequently afterward resorted to for additions to the revenue, or for particular objects, under control or by sanction of the government, the mode of conducting the L., and the conditions, being from time to time varied. In the early years of the present c., the state L., as it was usually called, was one of the regular institutions in Britain. Usually, the number of tickets in a L. was 20,000, at a value of £10 each in prizes. this valuation they were offered to the competition of contractors, and ordinarily assigned at an advance of £5 or £6 per ticket. The contracting party sold them to the public at a further advance of £4 to £5 per ticket; thus the value was about doubled. The contractor devised the scheme of prizes and blanks—there being always a few prizes of large amount, to tempt purchasers. To accommodate persons with moderate means, certain tickets were divided into halves, and others into quar-

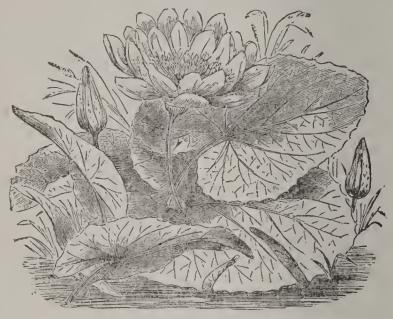
ters, eighths, or sixteenths. The dexterity of the contractors consisted in drawing up 'schemes,' which in all varieties of placards and hand-bills were issued in profusion through the means of agents all over the country. The drawing took place on a specified day or days in a public hall in London, before certain commissioners, and was in this wise. Two machines, called 'wheels,' were appropriated, one for the numbers, and the other for the prizes and blanks. On a number being drawn, its fate was determined by the billet which next afterward came out. Two boys were the operators, one at each wheel. On the grounds of injury to public morals, lotteries were altogether abolished by act of parliament 1826; though a special statute legalized 'art-unions' which are only lotteries under a specious form-for their supposed good effects in encouraging art. In France. the abolition of lotteries took place 1836, and in Hesse-Darmstadt 1852. The other German states continued the use of them; and 1841, Prussia derived from them a revenue of more than 900,000 thalers, Austria, of 3,600,-In the kingdom of Italy lotteries still exist. 000 florins. Few worse ways of supplying the exchequer of a country have been imagined; and the only excuse urged is, that the gambling spirit exists, and will find some means of gratification, even if lotteries were abolished. It was found, however, in France that the abolition of lotteries was immediately followed by an increase of savingsbank deposits; and it has been everywhere observed, that the purchasers of L. tickets have been to a great extent persons to whom economy and prudence are most necessary to the comfort of families and the general welfare of the state.

In the United States, from an early date lotteries were chartered for various public, charitable, and religious objects, such as hospitals, colleges, and sometimes churches. The congress, 1776, instituted a national L. with the warm advocacy of Jefferson and other states-men. Between 1776 and 1820, not less than 70 acts of congress authorized lotteries for various objects. An average of 85 per cent. of subscriptions was returned in prizes. As early as 1699, the ministers of the churches in Boston joined in public denunciation of them as a 'cheat' and as doing the work of 'pillagers of the people;' but this was declared puritanical and had little Not till 1830 did opposition become positive and efficient. In 1832, the young men's association of Dr. Lyman Beecher's church in Boston, examined the whole subject of lotteries and denounced them as immoral and harmful to the state. This originated a movement which in a few years spread through New England. Job R. Tyson, Philadelphia, published a vigorous attack on them 1833; and Penn. moved for their abolition by law, followed by Md. 1836. They are now under legal prohibition (either actual or prospective) in all the states. Even 'art-unions,' lotteries for distribution of works of

LOTUS.

art, excepted for a time, are now forbidden. The sale of tickets for foreign lotteries is strictly prohibited. As with other laws, there is a certain amount of evasion or secret transgression of this law; but in the main it is well enforced.

LOTUS, *lō'tŭs* [see Lote]: name given by the Greeks to a number of different plants whose fruit was used for food. One of the most notable of these is the *Zizyphus Lotus*, native of n. Africa and s. Europe, belonging to



Nymphæa Lotus.

the nat. ord. Rhamnaceæ: see Jujube. It is a shrub two or three ft. high, and its fruit, produced in great abundance, is a drupe of the size of a wild plum, with an almost globose kernel. This fruit is somewhat farinaceous, and has a pleasant, sweetish, mucilaginous taste. It is ealled by the Arabs Nabk or Nabka; and has, from earliest times, served as food to the inhabitants of n. Africa, where it is still a principal part of the food of the poor. Probably it was on this fruit that Homer's Lotophagi (q.v.) lived.—The fruit of the Diospyrus Lotus, or Date Plum, was sometimes called the L.: see DATE Plum.—The name L. was given also to several beautiful species of Water-lily (q.v.), especially to the Blue WATER-LILY (Nymphwa corulea) and the EGYPTIAN WATER-LILY (N. lotus), and to the Nelumbo (q.v.) (Nelumbium speciosum), which grow in stagnant and slowly running water in s. Asia and n. Africa. Nymphæa lotus was ealled by the Egyptians Shnin or Seshin, and is called by the Arabs Beshnin, the Coptic name with the masculine article. It grows in the Nile and adjacent rivulets, and has a large white flower. The root is eaten by the people who live near the lake Menzaleh. The rivulets near Damietta abound with this flower, which rises two ft. above the water. It was the rose of ancient Egypt, the favorite flower of the country, and is often seen made into wreaths or garlands, placed on the foreheads of women, or held in their hands, and smelled for its fragrance. It frequently appears in the hieroglyphs, where it represents the Upper Country or s. Egypt, and entered largely into works of art—capitals of columns, prows of boats, heads of staves, and other objects being fashioned in its shape. In the mythology, it was the special emblem of Nefer Atum, son of Ptah and Bast; the god Harpocrates is seated upon it; and there was a mystical L. of the sun. In the mythology of the Hindus and Chinese, the L. plays a distinguished part. It is the Nelumbo. The Hindu deities of the different sects are often represented seated on a throne of its shape, or on the expanded flower. The color in s. India is white or red, the last color fabled to be derived from the blood of Siva, when Kamadeva, or Cupid, wounded him with the love-arrow. Lakshmî, also, was called the 'lotus-born,' from having ascended from the ocean on its flower. It symbolized the world; the Meru, or residence of the gods; and female beauty. Among the Chinese, the L. had a similar poetic meaning, being especially connected with Fuh, or Buddha, and symbolizing female beauty, the small feet of

their women being called kin leën, or 'golden lilies.'
Wilkinson, Mann. and Cust., iii. 187, 200, iv. 44, 63, v.
264, 269; Jomard, Descr. de l'Eg., t. 1, s. 5; Homer, II.
xii. 238, iv. 171, Od. ix. 92; Herodotus, ii. 96, iv. 177;
Diod. Sic. i. 34; Coleman, Mythology of the Hindus.

LOTZE, löt'seh, Rudolph Hermann: one of the most eminent philosophers of this century: 1817, May 21-1881, July 1; b. Bautzen, Saxony. He studied at the gymnasium of Zittau, and graduated in medicine and philosophy at the Univ. of Leipzig 1838, where he became 1839 adjunct prof. of philosophy. In 1844 he became prof. at Göttingen, where he spent nearly 40 years lecturing on philosophy. In his lectures and in works on various departments of knowledge, L. slowly matured his system, which in later years he gave to the world in his great work, Mikrokosmus (3 vols. 1856-64; 3d ed. 1876-80). His earliest work, Metaphysik (Leipzig 1841), published when he was only 24 years of age, shows however the same philosophical principle. Lotze's position was opposed to the idealism of Hegel, the realism of Herbart, and the materialism which in his day had invaded many schools of thought. His characteristic view was, that we find everywhere the region of facts, the region of laws, and the region of standards of value and worth—three regions never separated in reality, but only in our thoughts. The world of facts is the field in which, and the laws are the means by which, those higher standards of moral and æsthetic value are being realized; which union becomes intelligible only through our conception of a personal God who created the world of forms and of laws in His voluntary choice of them as the natural agents to bring to pass the high ends of His work.

In the last decade of his life, L. embodied his courses

LOUD-LOUGHREA.

of lectures in System der Philosophie, of which two vols., Logik (1874, 2d ed. 1880), and Metaphysik (1879) appeared. The concluding vol. on practical philosophy, was precluded by his death. His life was quiet and uneventful; his studies were profound and all-embracing; his spirit was calm, candid, broad, serious, and above all things concerned with living realities. All things with him come from, and exist only in relation to the living spirit of God. Misunderstood, though greatly admired, in his time, L. may be expected to exert increasing influence over the philosophic thought of the day now upon us.

LOUD, a. lowd [Icel. hliod, sound: Ger. laut, sound; laut, loud]: having a strong sound; noisy; elamorous; turbulent; emphatic: Add. with loudness. Loudly, ad. lowd'li. Loud'ness, n. -nes, a great noise or sound; clamor; uproar. Loud patterns, flashy and showy patterns—thus indicating an analogy between sound and color.—Syn. of 'loud': obstreperous; sonorous; boisterous; vociferous; blustering; vehement; tumultuous.

LOUDON, low'don, John Claudius: botanist and horticulturist: 1783, Apr. 8—1843, Dec. 14; b. Cambuslang, Lanarkshire, Scotland. In 1803 he published Observations on Laying out Public Squares; 1805, Treatise on Hot-houses; and afterward was author of a number of works on botany, mostly of popular character, which have contributed much to extend knowledge and taste in horticulture. Among these are Encyclopædia of Gardening (1822); and of Agriculture (1825); Green-house Companion (1825); the Encyclopædia of Plants (1829); and his great work, Arboretum et Fruticetum Britannicum (8 vols. 1838). He died at Bayswater. L. established four different magazines, which he edited simultaneously with his Arboretum.—His widow wrote a number of pleasing popular works, chiefly connected with botany and gardening.

LOUGH, n. lök: the Irish spelling of Scotch loch; a lake; an arm of the sea: see Loch.

LOUGHBOROUGH, lŭf'bŭr-rŭh: manufacturing and market-town of England, county of Leicester, 12 m. n.n.w. of the town of Leicester. The chief educational institution is the Burton Foundation (dating from 1495)—with which five distinct schools are connected, each pupil paying a small sum. L. has extensive manufactures of patent Angola hosiery, of other woolen and cotton goods, elastic webs, net-lace, and shoes. Pop. (1871) 11,588; (1881) 14,733; (1891) 18,196.

LOUGHREA, loch-rā': market-town of Ireland, county of Galway, about 20 m. e.s.e. of the town of Galway. It stands on the n. bank of Lough Rea, a beautiful little lake four m. in circumference. It contains a Rom. Cath. chapel, with a Carmelite friary and nunnery, and the remains of a Carmelite abbey founded 1300. Manufactures of narrow linen and coarse diapers; brewing and tanning are carried on. Pop. (1881) 3,159.

LOUIS I., King of Bavaria: see Ludwig I., Karl Au-Gust.

LOUIS I., THE DÉBONNAIRE OF THE PIOUS, ROMAN Emperor, King of the Franks: LOUIS II., LE BEGUE, King of France: LOUIS III., King of France: LOUIS IV., D'OUTREMER, King of France: LOUIS V., LE FAINÉANT, King of France: see Carlovingians.

LOUIS VI., THE FAT, King of France: LOUIS VII., King of France: LOUIS VIII., THE LION, King of France: see Capetian Dynasty.

LOUIS IX., or SAINT LOUIS, King of France: 1215, Apr. 25—1270, Aug. 25 (reigned 1226-70); b. Poissy. He succeeded his father, Louis VIII. His mother, Blanche of Castile, a woman of great talent and sincere piety, was regent during his minority, and bestowed on him a strictly religious education, which materially influenced his character and policy. When L. attained his majority, he became involved in a war with Henry III. of England, and defeated the English at Taillebourg, at Saintes, and at Blaye 1242. During a dangerous illness, he made a vow that, if he recovered, he would go in person as a Crusader; accordingly, having appointed his mother regent, he sailed, 1248, Aug., with 40,000 men to Cyprus; whence, in the following spring, he proceeded to Egypt, thinking, by the conquest of that country, to open the way to Palestine. He took Damietta, but was afterward defeated and taken prisoner by the Mohammedans. A ransom of 100,000 marks of silver procured his release 1250, May 7, with the relics (6,000 men) of his army. He proceeded by sca to Acre, and remained in Palestine till the death of his mother (1252, Nov.) compelled his return to France. He then applied himself earnestly to the affairs of his kingdom, united certain provinces to the crown on the lapse of feudal rights or by treaty, and made many important changes, the general tendency of which was to increase the royal power. A code of laws was brought into use, known as the Etablissements de St. Louis. L. embarked on a new Crusade, 1270, July 1, and proceeded to Tunis; but a pestilence breaking out in the French camp, carried off the greater part of the army and the king himself. his death, his son, Philip III., was glad to make peace and return to France. Pope Boniface VIII. canonized L. 1297: his day is Aug. 25 or 26. For an interesting picture of the religious side of L.'s character, consult Bolin, VII., 1416-48. Neander's Kirchengeschichte.

LOUIS XI., King of France: 1423, July 3—1483, Aug. 30 (reigned 1461-83); b. Bourges; eldest son of Charles VII. From his boyhood he was restless, cruel, tyrannical, and perfidious. He made unsuccessful attempts against his father's throne, was compelled to fice to Brabant, and sought the protection of his uncle, Philip the Good, Duke of Burgundy, with whom he remained till his father's death 1461, when he succeeded to the

The severe measures which he immediately adopted against the great vassals, led to a coalition against him, at the head of which were the great Houses of Burgundy and Bretagne. L. owed his success more to his artful policy than to arms; and the war threatening to break out anew, he invited Charles the Bold, Duke of Burgundy, to a friendly conference at Péronne, 1468, Oct. His agents, meanwhile, had stirred up the people of Liege to revolt against the duke, upon the news of which occurrence, Charles made the king a prisoner, and treated him roughly. On the death of the Duke of Burgundy 1477, who left an only daughter, L. claimed great part of his territories as male fiefs lapsed to the superior, and wished to marry the young duchess to his eldest son, a boy of seven years. On her marriage with the Archduke Maximilian, he took arms; but a peace was concluded at Arras, 1482, Dec. 25, by which the daughter of Maximilian was betrothed to the dauphin (afterward Charles VIII.), and the counties of Burgundy and Artois were transferred to France. L. was also successful—after the use of means far from honorable -- in annexing Provence to the crown as a lapsed fief. He greatly increased the power of the French monarchy. The latter years of his reign were spent in great misery, in excessive horror of death, which superstitious and ascetic practices failed to allay. It was calculated that he put about 4,000 persons to death in the course of his reign, mostly without form of trial. Yet he was a patron of learning, and is said to have been the author of Les cent Nouvelles nouvelles, a sort of imitation of the *Decameron*, and of the *Rosier* des Guerres, a book of instruction for his son. He also materially advanced the civilization of France by encouraging manufactures, commerce, and mining. He improved the public roads and canals, established several printing-presses, and founded three universities.

LOUIS XIII., King of France: 1601, Sep. 27—1643, May 14 (reigned 1610-43); b. Fontainebleau; son of Henri IV. and Marie de' Medici. He succeeded to the throne on the death of his father, his mother becoming regent. She entered into close alliance with Spain, and betrothed the king to Anne of Austria, daughter of Philip III. of Spain, upon which the Huguenots, becoming apprehensive of danger, took up arms; but peace was concluded at St. Menehould, 1614, May 5; and the king, then declared of age, confirmed the Edict of Nantes, and called an assembly of the states, which was soon dismissed, because it began to look too closely into financial affairs. See Marie De' Medici. The suppression of Protestantism and liberty in Bearn led to the religious war, in which the Protestants lost almost all their places of security, and which ended 1622. After the death of De Luynes, 1624, Richelieu, afterward Cardinal and Duke, became chief minister of Louis. His powerful mind oblained complete control over the weak king, and his

LOUIS XIV.

policy effected that increase of monarchical power, at the expense of Protestants, nobles, and parliaments, which reached its consummation in the reign of Louis XIV. The overthrow of the Huguenots was completed by the capture of Rochelle, 1628, Oct. 20, at the siege of which the king took part in person. In 1631, his brother, the Duke of Orleans, having left the court, assembled a troop of Spaniards in the Netherlands, and entered France to compel the dismissal of Richelieu, whom he hated, and whom the king also secretly disliked; but the duke was completely defeated by Marshal Schomberg at Castelnaudary. Richelieu now led L. to take part in the Thirty Years' War, openly supporting Gustavus Adolphus and the Dutch against the Spaniards and Austrians. The latter years of L.'s reign were signalized by the getting possession of Alsace and of Roussillon, acquisitions which were confirmed in the following reign. L.'s queen, after 23 years of married life, bore a son 1638, who succeeded to the throne as Louis XIV.; and 1640, a second son, Philip, Duke of Orleans, ancestor of the present House of Orleans.

LOUIS XIV., LE GRAND, King of France: 1638, Sep. 16—1715, Sep. 1 (reigned 1643-1715); b. St. Germain-en-Laye, son of Louis XIII. and Anne of Austria. At his father's death his mother became regent, and Mazarin (q.v.) her minister. During the king's minority, the discontented nobles, encouraged by Spain, sought to shake off the authority of the crown, and the civil wars of the Fronde (q.v.) arose. Peace was concluded 1659; and in the following year L. married the Infanta Maria Theresa, a princess possessing neither beauty nor other attractive qualities. Little was expected from the young king; his education had been neglected, and his conduct was dissolute; but on Mazarin's death, 1661, he suddenly assumed the reins of government, and from that time forth carried into effect with rare energy a political theory of pure despotism. His famous saying, 'L'état c'est moi' (I am the state), expressed the principle to which everything was accommodated. He had a cool and clear head, with much dignity and amenity of manners, great activity, and indomitable perseverance. The distress caused by the religious wars had created throughout France a longing for repose, which was favorable to his assumption of absolute power. was ably supported by his ministers. Manufactures began to flourish under the royal protection. The fine cloths of Louviers, Abbeville, and Sedan, the tapestries of the Gobelins, the carpets of La Savonnerie, and the silks of Tours and Lyon acquired wide celebrity. The wonderful talents of Colbert (q.v.) restored prosperity to the ruined finances of the country, and provided the means for war; while Louvois (q.v.) applied these means in raising and sending to the field armies more thoroughly equipped and disciplined than any other of that age.

On the death of Philip IV. of Spain, L., as his son-inlaw, set up a claim to part of the Spanish Netherlands; and 1667, accompanied by Turenne (q.v.), he crossed the frontier with a powerful army, took many places, and made himself master of that part of Flanders since known as French Flanders, and of the whole of Franche Comté. The triple alliance-between England, the Statesgeneral, and Sweden—arrested his career of conquest. The treaty of Aix-la-Chapelle (1668) forced him to surrender Franche Comté. He vowed revenge against the States-general, strengthened himself by German alliances, and purchased with money the friendship of Charles II. of England. He seized Lorraine 1670; and 1672, May, again entered the Netherlands with Condé and Turenne, conquered half the country in six weeks, and left the Duke of Luxembourg to lay it waste. The States-general formed an alliance with Spain and with the emperor, but L. made himself master of 10 cities of the empire in Alsace; and in the spring of 1674, took the field with three great armies of which he commanded one in person, Condé another, and Turenne a third. Victory attended his arms; and notwithstanding the death of Turenne, and the retirement of the Prince of Condé from active service, he continued in subsequent years, with his brother, Duke of Orleans, to extend his conquests in the Netherlands, where, by his orders, and according to the ruthless policy of Louvois, the country was fearfully desolated. The Peace of Nimeguen 1678, left him possession of many of his conquests. He now established Chambres de Réunion in Metz, Breisach, and Besançon, pretended courts of law, in which his own will was supreme, and which confiscated to him, as feudal superior in right of his conquests, territories which he wished to acquire, seignories belonging to the Elector Palatine, the Elector of Treves, and others. also, 1681, Sep. 30, made a sudden and successful attack on Strasburg, a free German city, the possession and fortification of which added greatly to his power on the The acquisition thus made, a treaty in 1684 confirmed to him.

L. had now reached the zenith of his career. All Europe feared him; his own nation had been brought by tyranny, skilful management, and military glory, to regard him with Asiatic humility, admiring and obeying; all remnants of political independence had been swept away; no assemblies of the states or of the notables were held; the nobles had lost both the desire and the ability to assert political power; the municipal corporations no longer exercised any right of election, but received appointments of officials from the court; the provinces were governed by intendants, who were immediately responsible to the ministers, and they to the king, who was his own prime minister. Even the courts of justice yielded to the absolute sway of the monarch, who interfered at pleasure with the ordinary course of law, by the

appointment of commissions, or withdrew offenders from the jurisdiction of the courts by Lettres de Cachet (q.v.), of which he issued about 9,000 in the course of his reign. He asserted a right to dispose at his pleasure of all properties within the boundaries of his realm, and took credit to himself for gracious moderation in exercising it sparingly. The court was the very heart of the political and national life of France, and there the utmost splendor was maintained; and a system of etiquette was established, which was a sort of perpetual worship of the king.

It was a serious thing for France and the world when L. fell under the control of his mistress, the Marquise de Maintenon (q.v.), whom he married in a half-private manner 1685, and who was herself governed by the Jesuits. One of the first effects of this change was the adoption of severe measures against the Protestants. When it was reported to L. that his troops had converted all the heretics, he revoked the Edict of Nantes 1685, and then ensued a bloody persecution; while more than half a million of the best and most industrious of the inhabitants of France fled, carrying their skill and industry to other lands. Yet L. was not willing to yield too much power to the pope; and quarrelling with him concerning the revenues of vacant bishoprics, he convened a council of French clergy, which declared the papal power to extend only to matters of faith, and even in these to be de-

pendent on the decrees of councils.

The Elector of the Palatinate having died 1685, May, and left his sister, Duchess of Orleans, heiress of his movable property, L. claimed for her also all the allodial lands; and from this and other causes arose a new European war. A French army invaded the Palatinate, Baden, Würtemberg, and Treves, 1688. In 1689, the Lower Palatinate and neighboring regions were laid waste by fire and sword. This atrocious proceeding led to a new coalition against .France. Success for a time attended the French arms, particularly in Savoy and at the battle of Steinkerk. Reverses, however, ensued; the war was waged for years on a great scale, and with various success; and after the French, under Luxembourg, had gained, 1693, the battle of Neerwinden, it was found that the means of waging war were very much exhausted, and L. concluded the peace of Ryswick 1697, Sep. 20. The navy had been destroyed, the finances were grievously embarrassed, the people were suffering from want of food, and discontent was deep and general. L. placed the Count D'Argenson at the head of the police, and established an unparalleled system of espionage for maintenance of his own despotism. The power of Madame de Maintenon and her priestly advisers became more and more absolute at the court, where scandals of every kind increased.

At the death of Charles II of Spain, 1700, Nov. 1, it was found that L. had obtained his signature to a will

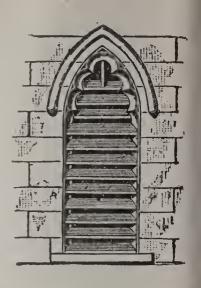
PLATE 5.



Panel in the Louis Quatorze Style.



Panel in the Louis Quinze Style.



Louver-window.



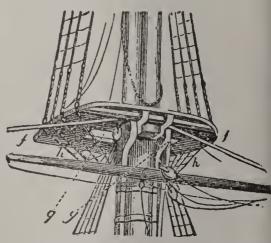
Louver, Abbot's Kitchen, Glastonbury.



Lotus.



Table Louis Quatorze Style.



Rigging of Ship's Top: f, f, Top; g, g, Lubber's-holes; h,h, Futtock-shrouds.

by which he left all his dominions to one of the grand-sons of his sister, who had been L.'s queen. L. supported to the utmost the claim of his grandson (Philip V.), while Emperor Leopold supported that of his son, afterward Emperor Charles VI. But the power of France was now weakened, and the war had to be maintained on the side both of the Netherlands and of Italy. One bloody defeat followed another; Marlborough was victorious in the Low Countries, and Prince Eugene in Italy; while the forces of L. were divided and weakened by the employment of large bodies of troops against the Camisards in the Cevennes, for the extinction of the last relics of Protestantism. Peace was concluded at Utrecht, 1713, Apr. 11; the French prince obtaining the Spanish throne, but France sacrificing valuable colonies. A terrible fermentation now prevailed in France, and the country was almost ruined; but the monarch maintained to the last an unbending despotism. He died at Versailles after a short illness, in his 77th year, and was succeeded by his great-grandson, Louis XV. His son, the Dauphin, and his eldest grandson, Duke of Bretagne, both had died Louis had a number of natural children, and he had legitimized those of whom Madame de Montespan was the mother; but the parliament, which made no objection to recording the edict when required by him, made as little objection to annulling it when required by the next government. The 'works' of Louis XIV. (6 vols. Paris, 1806), containing his Instructions for his sons, and many letters, afford important information as to his character and the history of his reign. The reign of Louis XIV. is regarded as the Augustan age of French literature and art, and it can hardly be doubted that France has never since produced poets like Corneille and Racine in tragedy, or Molière in comedy; satirists like Boileau, or divines like Bossuet, Fènelon, Bourdaloue, and Massillon.

LOUIS XV., King of France: 1710, Feb. 15—1774, May 10 (reigned 1715-74); b. Versailles; great-grandson of Louis XIV., whom he succeeded on the throne. Duke of Orleans, as first prince of the blood, was regent during the minority of the king, whose education was intrusted to Marshal Villeroi and Cardinal Fleury. The country was brought to the verge of ruin during the regency, by the folly of the regent and the financial schemes of the celebrated Scotchman, Law (q.v.). When L. was 15 years of age, he married Maria Lesczynski, daughter of Stanislas, dethroned king of Poland. Fleury was for a long time at the head of affairs, and by parsimony succeeded in improving the condition of the finances. It was his policy also to avoid war, in which however, L. was involved 1733, in support of his fatherin-law's claim to the throne of Poland; the result being that L. obtained Lorraine for his father-in-law, and ultimately for France. Nothwithstanding the vigor with which this war was conducted, the character of L. now

became completely developed as one of the utmost sensuality, selfishness, and baseness. He surrounded himself with the vilest society, utterly forsook his queen, and lived, as he continued to do to the end of his life, in extreme debauchery, such as has rendered his name a In 1740, the war of the Austrian Succession broke out, in which the French arms were not very successful, and during which Fleury died. The king was present, 1745, at the great victory of Fontenoy, and showed plenty of courage. In the preceding year, during a dangerous illness, he had made vows of reforming his life, and dismissed his mistresses; but on recovering health, he presently relapsed into vice. The peace of Aix-la-Chapelle, 1748, was largely due to the entreatics of Madame de Pompadour, whose influence the Empress Elizabeth of Russia secured by bribes and flatteries. France gained nothing by this war; but her people were

ruined, and her navy destroyed.

The king now sank completely under the control of Madame de Pompadour, who was both concubine and procuress, and to whom he gave notes on the treasury for enormous sums, amounting in all to hundreds of millions of livres. War broke out again with Britain concerning the boundaries of Acadia (Nova Scotia), and was for some time prosecuted with considerable vigor. In 1756, an extraordinary alliance was formed between France and Austria, contrary to the policy of ages, and chiefly through the influence of Madame de Pompadour; but as she disposed of the command of the French armies at her pleasure, success did not attend their operations. The state of the finances, the dispirited condition of the army, and the outcry of the distressed people, were not sufficient to induce the king to make peace; but governed by his mistress, he obstinately persevered in war, even after the terrible defeat of Minedn 1759; while the British conquered almost all the French colonies both in the E. and W. Indies, with Cape Breton A peace, most humiliating to France, was at last concluded 1763.

L., although indifferent to the ruin of his people, and to everything but his own vile pleasures, was reluctantly compelled to take part in the contest between Madame de Pompadour and the Jesuits, the result of which was the suppression of the order 1764: see Jesuits. The parliaments, emboldened by their success in this contest, now attempted to limit the power of the crown, by refusing to register edicts of taxation; but the king acted with unusual vigor, maintaining his own absolute and supreme authority, and treating the attempt of the parliaments to unite for one object as rebellious. The Duke of Choiseul was now displaced from office: a new mistress, Madame Du Barry, having now come into the place of Madame de Pompadour; and a ministry was formed under the Duke d'Aiguillon, every member of which was an enemy of the parliaments, and an object of popular

LOUIS XVI.

detestation. The councilors of the parliament of Paris were removed from their offices, and banished with great indignity; and an interim parliament was appointed (1771, Jan.), which duly obeyed the court. The princes of the blood protested against this arbitrary act, which deeply moved the popular indignation. The king, when told of the ruin of the country, and the misery and discontent of the people, only remarked that the monarchy would last as long as his life; and continued immersed in sensual pleasures and trifling amusements. boasted of being the best cook in France, and was much gratified when the courtiers ate eagerly of the dishes which he had prepared. His gifts to Madame Du Barry, notwithstanding the embarrassment of the finances, in five years amounted to 180 millions of livres. L., who had for some time suffered from a disease contracted through vice, was seized with small-pox, the infection of which was communicated by a young girl who had been brought to him; and died, so far from being regretted that his funeral was a sort of popular festival, and was celebrated with pasquils and merry ballads. His death-bed was one of extreme misery. He was succeeded by his grandson, Louis XVI.

LOUIS XVI., AUGUSTE, King of France: 1754, Aug. 23—1793, Jan. 21 (reigned 1774–93); b. Versailles; third son of the Dauphin, Louis, who was the only son of Louis XV. He was styled Duke de Berry, until, by the death of his father and his elder brothers, he became Dauphin. He had a vigorous frame, was fond of hunting and manly exercises, took great pleasure in mechanical labors, and showed aptitude for geometry, but none for political science. In the midst of the most corrupt of courts, he grew up temperate, honest, and moral. He was married 1770, May 10, to Marie Antoinette, youngest daughter of the Empress Maria Theresa of Austria.

When L. ascended the throne, misery and discontent prevailed throughout France. He had not the vigor and judgment necessary for circumstances full of difficulty, and was conscious of his own weakness. Maurepas, an old courtier, his prime minister; but among his ministers were Malesherbes, Turgot, and other men of known patriotism; and his accession was signalized by the remission of some of the most odious taxes, the abolition of the last relics of serfdom, the abolition of the torture in judicial investigations, a reduction of the expenditure of the court, and the foundation of institutions for the benefit of the workingclasses. He was, for a time, extremely popular; but deeper reforms were rendered impossible by the opposition of the privileged classes. In 1777, June, when the state of the finances seemed nearly desperate, Necker (q.v.) was called to the office of general director of them, and succeeded in bringing them to a more tolerable condition, without any very radical change; but from the interference of France in the American war

of independence, Necker was obliged to propose the taxation of the privileged classes, hitherto exempted. Their resistance compelled him to resign; and Joly de Fleury succeeded him; but the general discontent induced the king, 1783, to appoint Calonne (q.v.) comptroller-gen., who found money for a time by borrowing, much to the satisfaction of the courtiers. But the indignation of the people increased, and Calonne found it necessary to recommend the convening of an assembly of the notables. Abp. Loménie de Brienne became finance minister 1787, May 1. He obtained from the Notables some concessions and some new taxes. parliament of Paris refused to register the edict of taxation, as oppressive to the people; and the extravagance of the court and the queen began to be freely spoken The convening of the States-general now began to be demanded from every corner of France. The king registered the edicts in a lit de justice, and banished the councilors of parliament to Troyes; but erelong found it necessary to recall them, and experienced from them even a stronger opposition than before. 1788, May 8, he dissolved all the parliaments, and established a new kind of court (Cour Plénière) instead; but this act of despotism set the whole country in a flame. became still worse, when, Aug. 16, appeared the famous edict, that the treasury should cease from all cash payments except to the troops. Brienne was compelled to resign, and Necker again became minister. An assembly of the states of the kingdom was resolved upon; and by the advice of Necker, who wished a counterpoise to the influence of the nobility, clergy, and court, the Third Estate was called in double number.

For the subsequent history of L., see France. All readers of history are familiar with the melancholy incidents of his life, from the opening of the assembly of the states (1789, May 5) till his tragic execution. At ten o'clock in the morning of 1793, Jan. 21, he died by the guillotine, in the Place de la Révolution. Great precautions were taken to prevent any rescue. As the executioner bound him, Louis tore himself free, and exclaimed: 'Frenchmen, I die innocent; I pray that my blood come not upon France.' The rolling of drums drowned his voice. Ere the guillotine fell, the Abbé Edgeworth, his confessor, cheered him with the words: 'Son of St. Louis, ascend to heaven!'

LOUIS XVII., CHARLES, titular King of France: 1785, Mar. 27—1795, June 8; b. Versailles; second son of Louis XVI. He received the title Duke of Normandy, till, on the death of his brother 1789, he became Dauphin. He was a promising boy. In the earlier days of the Revolution, he was sometimes dressed in the uniform of the National Guard, and decorated with the tricolor, to gratify the populace. After the beheading of his father, he was proclaimed king and was recognized as such by the governments of England and Russia; but

LOUIS XVIII.

he continued in prison—at first with his mother, after-terward apart from her—in the Temple, under the charge of a coarse Jacobin shoemaker, named Simon, who treated him with cruelty, and led him into vicious excesses, so that he became a mere wreck both in mind and body. After the overthrow of the Terrorists, he was—perhaps intentionally—forgotten, and died not long afterward. A report spread that he had been poisoned, but a commission of physicians examined the body, and declared the report unfounded.

LOUIS XVIII., STANISLAS XAVIER, King of France: 1755, Nov. 17—1824, Sep. 18 (succeeded to the title 1795; reigned 1814–24); b. Versailles; next younger brother of Louis XVI. He received the title Count de Provence. In 1771, he married Maria Josephine Louisa, daughter of Victor Amadeus III. of Sardinia. After the accession of Louis XVI. to the throne, he assumed the designation Monsieur, and became an opponent of every salutary measure of the government. He fled from Paris on the same night with the king, and was more fortunate, for, taking the road by Lille, he reached the Belgian frontier in safety. With his brother, the Count d'Artois, he now issued declarations against the revolutionary cause in France, which had a very unfavorable effect on the situation of the king. The two brothers for some time held a sort of court at Coblenz. L. joined the body of 6,000 emigrants who accompanied the Prussians across the Rhine 1792, July, and issued a manifesto even more foolish and extravagant than that of the Duke of Brunswick. After the beheading of his brother, Louis XVI., he proclaimed his nephew king of France, as Louis XVII., and 1795 himself assumed the title of king. The events of subsequent years compelled him frequently to change his place of abode, removing from one country of Europe to another, till at last, 1807, he found refuge in England, and purchased a residence, Hartwell, in Buckinghamshire, where his wife died 1810, and where he remained till the fall of Napoleon opened the way for him to the French throne. He landed at Calais 1814, Apr. 26, and entered Paris, after 24 years' exile, May 3; and the nation received the constitutional charter from his hands June 4: see France.

The conduct of the government, however, was far from constitutional or liberal. The nobles and priests exercised an influence over the weak king, which led to severe treatment of the Imperialists, the Republicans, and the Protestants. Then followed Napoleon's return from Elba, when the king and his family fled from Paris, remained at Ghent till after the battle of Waterloo, and, after the end of the 'Hundred Days,' returned to France under protection of the Duke of Wellington. He issued from Cambrai a proclamation in which he acknowledged his former errors, and promised general amnesty to all except traitors. Again, however, he followed in many things the counsels of the party which detested

LOUIS, THE GERMAN-LOUISBURG.

all the fruits of the Revolution. But the chamber of deputies, elected with many irregularities, was fanatically royalist, and the king, by advice of the Duke de Richelieu, dissolved it; whereupon arose royalist plots for his dethronement, and the abolition of the charter. Bands of assassins were collected by nobles and priests in the provinces, who slew hundreds of adherents of the Revolution and of Protestants, and years elapsed ere peace and good order were in any measure restored.

LOUIS, lô'iss, F. lô-ē' (properly Ludwig), THE GER-MAN: abt. 805-876, Aug. 28 (reigned 843-876); third son of Louis le Débonnaire. By the treaty at Verdun, 843, L. obtained Germany, and became the founder of a distinct German monarchy. He died at Frankfurt, and his kingdom was divided among his three sons: Carlmann obtaining Bavaria, Carinthia, and the tributary Slavonic countries; Louis obtaining Franconia, Thuringia, Saxony, and Friesland; Charles the Fat, Swabia, from the Maine to the Alps: see Carlovingians.

LOU'IS, THE GREAT, King of Hungary: see HUNGARY.

LOUI'SA (Luise Auguste Wilhelmine Amalie), Queen of Prussia: see Luise.

LOUISBURG, lô'is-berg: ruined town and fortress on Cape Breton Island, province of Nova Scotia, Canada; lat. 45° 54′ n., long. 59° 52′ w.; named in honor of Louis XIV. of France. After the cession of the French settlements in Nova Scotia to England pursuant to the terms of the treaty of Utrecht, 1713, French emigrants took possession of Cape Breton Island, and the French govt. began erecting fortifications there designed to be the strongest in America. Work was carried on 30 years, and \$5,000,000 were expended on the fortress and its armament. A town was established on the s. side of a commodious land-locked harbor, which attained a pop. The station became very important to the naval and fishing interests of France in America, and in time threatened serious loss to the English and colonial fisheries. In 1745, while England and France were engaged in war, an expedition was sent from New England, devised by Gov. Shirley of Mass., sanctioned by the legislature of Mass., and commanded by William Pepperell, to attempt the capture of the place. Troops were conveyed in 100 vessels, made a landing Apr. 30, and besieged the town and fortress till June 17, when the French commander surrendered. Great as was the advantage of this capture to England, its possession was short-lived, as the treaty of Aix-la-Chapelle 1748 restored the place to France. In 1758 a British force of 14,000 men, 20 ships of the line, and 18 frigates, under command of Gen. Amherst, made an attack on it, and after a spirited defense the walls were breached, the town destroyed, and the garrison forced to surrender July 26. The British then spent \$50,000 in demolishing the fortifications.—Pop. (1901) 1,588.

LOUIS D'OR-LOUISIANA.

LOUIS D'OR, n. lô'ē dōr [F. a Louis of gold]: a gold coin introduced into France 1641, and continued till 1795. It was introduced in consequence of the prevalent custom of clipping and otherwise defacing the coins of the realm, from which malpractices it was thought to be in some measure secured by its border. The old coins were called in. The louis d'or ranged in value from about 16s. 7d. to 18s. 9\frac{3}{4}d. sterling, or from about \$4.03 to about \$4.60. Some louis d'ors bear special names, chiefly derived from the figure exhibited on the obverse side.—In some parts of Germany, in the old coinage were gold pieces of five thalers, often popularly called louis d'or, and the name is also occasionally applied to the French napoleon or 20-tranc piece.

LOUISIANA, lô-ē-zē-â'na: state; one of the United States of America: 1st in production of sugar and molasses. 3d in rice, 6th in cotton, 9th in salt; known

colloquially as the 'Creole State.'

Location and Area.—L. is in lat. 28° 56′—33° n., long. 89°—94° w.; bounded n. by Ark. and Miss., e. by Miss. and the Gulf of Mexico, s. by the Gulf of Mexico, w. by Tex.; extreme length e. and w. 300 m., extreme breadth n. to s. 240 m.; 48,720 sq. m. (31,180,800 acres); coast line 1,256 m.; internal water communication 2,500 m.; cap.

Baton Rouge.

Topography.—The surface in general is low and level, and slopes from low hills in the n. and n.w. to marshes in the delta of the Mississippi river below the river at high tide. High lands comprise 12,332,000 acres; level lands 13,773,000. A further subdivision gives good uplands 5,248,000 acres, pine hills 5,497,000, bluff lands 1,587,000, prairie region 2,483,000, arable alluvial lands 3,615,000, wooded alluvial 2,752,000, fine flats 1,585,000, coast marsh 3,338,000, inland water surface 1,228,000, and coast bays 1,100,000. Deducting the inland water, coast marsh, and coast bays surfaces, there are more than 22,000,000 acres of valuable land, all of which, excepting about 3,000,000 acres of rich prairie land, is covered with forests of choice timber, pine, cypress, gum, oaks of all kinds, bay, beech, poplar, hickory, ash, sycamore, locust, elm, willow, cottonwood, maple, mulberry, and other varieties. Of this large area less than one-eighth was under cultivation 1880, leaving about 19,000,000 acres to be opened for timber or improved for farms. L. is abundantly supplied with navigable waters. The Mississippi river traverses nearly 600 m. of it, and is navigable for the largest steamers; Red river crosses L. diagonally from the n.w., and through the removal of obstructions by the Federal govt. has become an important commercial channel; Sabine river forms a part of the w. boundary of the state, and receives a number of small tributaries from the e.; Washita, Tensas, Bœuf, Dugdemona, and Bistineau rivers belong to the Red river system; Pearl, Bogue Chitto, Tangipahoa, Tickfaw, and Amite principally drain the country e. of the Mississippi river; and

Atchafalaya Bayou, Vermilion Bayou, Bayou Teche, Bayou de Large, Bayou la Fourche, Grand river, and Bayou Terrebonne comprise the chief streams of the delta region. There are numerous lakes, and river expansions bearing the name of lakes, chief of which are Lake Ponchartrain, whose waters are salt and rise and fall with the tide from the Gulf of Mexico, Lake Maurepas, Lake Mermenteau, Sabine Lake, Calcasieu Lake, a series connected with Atchafalaya Bayou, and another in the n. belonging to the Red river and its tributaries. Along the gulf coast are a number of bays and sounds, notably Bay Ronde, Garden Island Bay, East Bay, West Bay, Atchafalaya Bay, Timbalier, Terrebonne, Côte Blanche, and Vermilion bays, and Chandeleur and Isle au Breton sounds. The country on both sides of some of the principal streams has to be protected against damage by overflow by a system of dikes, locally called levees. Spring freshets have frequently caused breaks in the levees and inundations of large tracts of country, one of the most noted being that of 1874, when 31 parishes were wholly or partly flooded and the Federal govt. had to aid private philanthropy in saving thousands of inhabitants of L. from starvation. Prior to 1875, nearly 2,000 m. of levees had been constructed on the Mississippi, Red, Lafourche, Atchafalaya, Black, and Washita rivers, and on several bayous. The success of the jetties at the s. pass of the Mississippi river (see DIKE: EADS, JAMES BUCHANAN) has greatly diminished the danger of future inundations, but the work of construction and repair is continued. In 1882-84 the state spent \$756,470 for levee work; 1884–86 the state spent \$717,493, and the Federal govt. \$262,869; and 1886–88 various authorities, Federal, state, district, and commercial, constructed 90 m. of new levees and raised and enlarged $70\frac{1}{2}$ m. of old, at a cost of about \$1,162,696.

Climate.—The delta region is malarious in autumn, but the w. and n.w. regions are healthful and equable. N. winds render the winter climate more severe than in the same latitudes on the Atlantic coast; and the summers are long and hot. Mean temperature, coldest month, New Orleans, 49.5°, warmest month 82.4°; average winter 53°—61°, summer 81°—83°; average rain fall

51 in.; average temperature for year 67.55°.

Geology.—The geological formations of L. are cretaceous, tertiary, and post-tertiary. The extraordinary richness of the soil is due to alluvial deposits. In the delta region sugar cane, cotton, rice, wheat, barley, buckwheat, sweet potatoes, and figs are extensively cultivated; the gulf islands produce cotton equal to that of the Atlantic sea-islands; Indian corn thrives in the tertiary region; cotton and flowers flourish everywhere; the uplands furnish excellent grazing; and the peach, quince, plum, fig, papaw, orange, olive, apple, and pear are abundant. The minerals comprise coal, iron, salt springs, and salt deposits, ochre, marl, lead, sulphates of soda and iron, and carbonate of lime in the n.w. parishes; and

sulphur, copper, and petroleum in the s. Quartz crystals, agates, jasper, carnelians, onyx, sardonyx, and fine felspar, with a large variety of fossils have been found. A deposit of sulphur, between the Calcasieu and Sabine rivers, is 112 ft. thick, and yields 60-96 per cent. of pure sulphur. In Winn parish is a cliff of marble that towers 70-100 ft., and descends into the lake as far as can be seen. Scientists estimate it to be at least 200 ft. high and 800-1,000 ft. thick. Petit Anse Island contains a mass of salt that has been mined to a depth of 60 ft. below the level of the gulf, 58 ft. through solid rock-salt of the purest quality.

Zoology.—Owing to its great forests, swamps, and bayous L. is rich in animal life. In the forests are black bears and wolves; in the cypress swamps panthers, wild-cats, raccoons, opossums, otters, rats, dormice, squirrels, and moles; in the bayous alligators, several species of turtles, lizards, horned frogs, chameleons, vipers, moccasins, and numerous species of snakes; and in the waters nearly every fish common to the Gulf of Mexico. The birds include bald and gray eagles, king vultures, turkey-buzzards, kites, hawks, pelicans, cranes, herons, and a large number of smaller species, rich in voice and plumage; and among the game are partridges, wild geese, wild ducks, brant, pigeons, and wild turkeys.

Agriculture.—In 1890 the farm lands covered 9,544,219

acres (of which 3,774,668 were improved); comprised 69,294 farms valued, with fences and buildings, at \$85,381,270; contained implements and machinery valued at \$7,167,355; used live stock valued at \$17,898,380. The estimated value of the farm products (1889) was \$54,343,953. L. is the chief sugar-producing state of the Union. The yield in 1895-6 was 532,494,652 lbs. of sugar against 11,139,074 lbs. from all the other states, and 21,663,410 gals. of molasses against 5,569,547 gals. from the other states. The sugar bounty paid by the U.S. govt. to L. 1896 was \$4,598,064. In 1895 L. had in cotton 1,142,568 acres, producing 513,843 bales; in hay 36,897 acres, producing 74,532 tons, valued at \$718,488; in potatoes, 9,301 acres, producing 827,789 bu., valued at \$596,008. On April 1, 1896, L. had 137,190 sheep, the wool-clip washed and unwashed was 685,950 lbs., and the combed wool 342,975 lbs. The principal crops 1902 were corn, 16,784,762 bushels; oats, 530.966 bushels; potatoes, 539,890 bushels; tobacco, 33,375 pounds; and cotton, 911,953 bales.

Manufactures.—L. had (1890) 2,613 manufacturing establishments, employing 31,901 hands, using capital \$34,754,-121, paying wages \$13,159,564, using materials valued at \$33,282,724, yielding products valued at \$57,806,713. Among leading industries were: sugar and molasses refining, capital \$1,943,601, wages \$449,857, materials \$11,167,852, products \$12,603,913; rice cleaning and polishing, capital \$1,033,700, wages \$182,827, materials \$3,423,650, products \$4,009,901; lumber and other mill products \$5,586,598, wages \$1,249,460, materials \$3,073,144, products \$5,599,744; lumber manufactures, capital \$947,-

837, wages \$443,784, materials \$716,967, products \$1,405,576; clothing, men's factory product, capital \$1,169,927, wages \$612,421, materials \$1,290,137, products \$2,174,747; foundry and machine-shop products, capital \$1,658,159, wages \$795,488, materials \$922,559, products \$2,151,586; bread and bakery products, capital \$623,074, wages \$425,825, materials \$1,316,149, products \$2,191,126; cotton compressing, capital \$1,624,482, wages \$669,069, materials \$32,584, products \$1,056,422; malt liquors, capital \$3,188,252, wages \$270,884, materials \$592,562, products \$1,905,760; cotton-seed oil and cake, capital \$1,082,752, wages \$177,192, materials \$1,058,115, products \$1,573,626; printing and publishing, capital \$1,128,866, wages \$894,512, materials \$402,923, products \$1,989,074, etc. in 1900 there were 4,350 manufacturing establishments, employing \$113,084,294 capital and 3,944 persons; paying \$3,090,185 for wages and \$82,299,893 for materials; and yielding products valued at \$121,181,683. The chief industry was sugar and molasses refining (cap. \$52,799,-105)

105; product \$47,891,691).

Commerce.-L. and Miss. comprise one U.S. internalrevenue district, with headquarters in New Orleans, and L. has two customs stations, New Orleans and Morgan City. The internal-revenue receipts in the year ending 1896, June 30, were \$1,465,549; the dist. produced 791,464 gals. of distilled spirits and 248,393 bbls. (31 gals.) of fermented liquors. Most of the domestic and foreign trade of L. passes through New Orleans. According to govt. returns for the year ended 1896, June 30, imports aggregated \$13,471,142, of which \$8,339,437 was free. Exports were \$80,986,791, of which all but \$283,000 was of domestic manufacture. The principal imports were: coffee \$5,533,-408, fruits \$1,848,901, sugar \$1,526,181, manufactures of textile grasses \$969,951, earthen, stone, and china ware \$271,-394. The leading exports were: cotton, unmanufactured, \$64,042,625, corn \$7,055,156, wheat and wheat flour \$1,103,-646, cotton-seed oil \$1,398,944, cotton-seed oil-cake \$1,477,-176, lumber \$1,894,418, hog products \$680,093. There were entered 76 sailing vessels with tonnage of 48,322, and 810 steam vessels with tonnage of 1,023,153. The chief steam tonnage was 134,159 from Germany, 118,964 from France, 411,929 from England, and 135,451 from Cuba. There were cleared 44 sailing vessels, tonnage 34,486, and 832 steam vessels, tonnage 1,042,845. Of this steam tonnage 134,159 ton's went to Germany, 118,964 to France, 339,480 to England, and 16,382 to Cuba.

Railroads.—L. has had a marked growth in railroad m leage in the past few years, increasing from 80 m. in 1850, 335 in 1860, 450 in 1870, and 652 in 1880, to 1,740 in 1890, 1993 in 1893, and 2,252 in 1896. In 1895 the railway capital stock was \$34,060,950, and the total investment (including funded debt) \$65,114,834. The gross earnings from passenger traffic were \$474,300, freight \$1,668,652, and all sources \$2,366,212; the net earnings were \$535,518; interest on bonds amounted to \$956 584 and stock dividend \$5,969. The mileage (1896) was 4.64 m. to each 100 sq. m.

of territory and 17.12 m. to each 10,000 pop. Most of the

lines of L. and Miss. centre at New Orleans.

Religion.—According to the census of 1890 L. had 2,701 church organizations, 2,520 church buildings with seating capacity 617,245; valued at \$5,032,194. Number of communicants or members 399,991, or 35.76 per cent of the pop. Of these the Bapt, bodies took the lead with 1.441 organizations, of which 865 were colored, 53 Primitive, 40 Free-will, and 482 Regular Baptists, South. These Baptist bodies had 1,376 buildings valued at \$988,967, and 98,552 members. There were 218 Meth. Episc. organizations, with 191 church buildings valued at \$303,302, and 15,073 members; there were 316 organizations of Meth. Episc., South, with 297 churches valued at \$483,470, and 24,874 members; African M. E., 240 organizations, with 265 churches valued at \$340,170, and 24,453 members; Presb. bodies of all classes. 88 organizations, with 72 churches valued at \$454,035, and 5,864 members; Prot. Episc., 85 organizations, with 65 churches valued at \$387,950, and 5,162 members; Lutherans of all bodies, 12 organizations, with 12 churches valued at \$64,400, and 41,832 members. Among the other churches were Congregationalists, 1,057 members, Jewish congregations, 3,374 members, Roman Catholics, 211,863 members. The Roman Catholics had 206 organizations, 184 edifices valued at \$1,568,200. The Roman Cath. Church has the archdiocese of New Orleans (est. 1793), which had (1889) 92 churches, 62 chapels and stations, 181 priests, 19 colleges and academies, 70 parochial schools, 10,951 white and 1,499 colored children in religious schools, 19 orphan asylums and hospitals, 1,735 inmates of charitable institutions, 3 weekly and 2 monthly publications, and estimated Rom. Cath. pop. of 300,000; and the diocese of Natchitoches with 27 churches, 8 chapels, 20 priests, 10 convents, 11 parochial schools, and estimated Rom. Cath. pop. of 35,000; total, 1 abp., 1 bp., 119 churches, 70 chapels, 19 colleges and academies, 10 convents, 81 parochial schools, 12,400 children in religious schools, 19 charitable institutions, and estimated Rom. Cath. pop. of 335,000.

Education.—In 1895 L. had 420,100 (est.) school children between the ages of 5 and 18, of whom 211,000 were boys and 209,100 girls. There were 155,926 enrolled (78,522 boys and 77,404 girls) in the public schools, or 37.11 per cent. of the total number of school age. Of these an average of 109,435 attended school on each of the 74 (average) days of the year. The whole number of teachers employed was 3,421, of whom 1,371 were male and 2,050 female. The state had 2,746 schoolhouses, estimated value \$865,000. The permanent funds gave an income of \$48,385, state and local taxes \$1,099,756, making the total income from all sources \$1,222,408. The total expenditures were \$1,086,-046, of which \$44,460 went for land, building, and furnishings, \$748,608 for salaries, and \$292,978 for bonded indebtedness and other expenditures. There were 22 public high schools with 82 teachers (36 male and 46 female) and 1,418 students in the secondary grade and

2.607 below that grade. Nine high-school libraries were reported having 3,408 volumes. The value of the grounds and buildings (14 reporting) was \$58,451, and the total income from all sources (16 reporting) \$30,580. There were reported 34 private secondary schools with 109 instructors, and 1,539 pupils besides 2,326 in elementary grades; 223 were preparing for college and 136 graduated in 1895, of whom 67 were college preparatory; these schools had 18 libraries containing 19,050 vols., and the income from all sources (16 reporting) was \$71,947. Among the denominational schools included in the private schools were one Bapt. with 2 instructors and 104 students, one Prot. Episc. with 6 instructors and 56 students, two Meth. Episc., South, with 3 instructors and 69 students, 12 Rom. Cath. with 50 instructors and 412 students, and 18 non-sectarian with 48 instructors and 901 students. L. had (1895) four colleges for men with 400 students, and five co-educational colleges with 227 male and 208 female students. These had 180 professors and instructors, of whom 143 were men and 37 women. The libraries contained 76,100 vols. and 10,500 pamphlets. Income from benefactions \$11,066, from tuition fees \$68,520, all sources \$264,700. These colleges comprise La. State Univ. and Agricultural and Mechanical College, Baton Rouge, chartered 1877 (nonsect.); St. Charles College, Grand Coteau, 1852 (Rom. Cath); Centenary College of La., Jackson, 1839 (Meth. Epise. S.,); Keachie College, Keachie, 1856 (Bapt.); College of the Immaculate Conception, New Orleans, 1856 (Rom. Catholic); Leland Univ., New Orleans, 1870 (Bapt.); New Orleans Univ., New Orleans, 1873 (Meth. Episc.); Southern Univ., New Orleans, 1881 (non-sect.): Straight Univ., New Orleans, 1869 (non-sect.); Tulane Univ. of La., New Orleans, 1884 (non-sect.); and Thatcher Institute, Shreveport, 1886 (non-sect.). Some of the non-sectarian institutions are under Congl. aus-The La. State Univ. and Agricultural and Mechanical College was formed by the consolidation of two institutions whose names are retained in its designation.' The State Univ. was opened 1860, and the Agricultural and Mechanical College 1873; the first session of the merged institutions was opened 1877; and the U.S. barracks at Baton Rouge with ample grounds was given the univ. by act of congress 1886. Tulane Univ. was founded by Paul Tulane 1882 on an endowment of real estate valued at \$1,200,000; was opened 1884 under the presidency of William Preston Johnston, LL.D.; and comprises a high school, college of liberal arts, law school, medical school, and the Sophie Newcomb Memorial College (opened 1887). It also maintains a free drawing school, with day and evening classes, which had (1887-8) 781 pupils. The state held 8 Peabody scholarships in the Peabody Normal School in Nashville, and received \$1,000 from the Peabody fund trustees to promote teacher's institutes. The Silliman Collegiate Institute in Clinton, founded by William Silliman and chartered 1852, with grounds and buildings valued at

\$30,000, and a productive fund of \$27,000, is the wealth-

iest college for women in the southwest.

Special institutions for the defectives and delinquents are: Louisiana Institution for the deaf and dumb at Baton Rouge, La.; Charitable Deaf-mute Institution of Holy Rosary, Chinchuba; Louisiana Institution for the Education of the Blind and Industrial Home for the Blind, Baton Rouge; Boys' House of Refuge, New Orleans.

Rouge; Boys' House of Refuge, New Orleans.

Illiteracy.—Persons 10 years old and upward enumerated (1890) 794,683, illiterates 364,184, or 45'8 per cent.; of the whites 10 years old and upward 80,939, or 20'1 per cent., were illiterate; of native white population 72,013, or 20'3 per cent., of foreign white population 8,926, or 18'7 per cent., of colored population 283,245, or 72'1 per cent., were

illiterate.

Finance and Banking.—In 1890 L. had a public indebtedness less sinking fund of \$33,335,497, or \$29.80 per capita. The outstanding principal of the bonded debt was \$28,133,-222, on which the annual interest charge was \$1,728,859; of this principal \$11,759,500 was for the state, \$46,500 for parishes, \$16,327,222 for municipalities. Total interestbearing bonded debt of the state (1897, Feb. 15) \$10,877,800, besides \$1,139,744 in floating debt. Assessed valuation (1896) \$251,911,316, which is estimated at about 37 per cent. of the actual value. The state tax 1896 was \$6 per \$1,000. L. had (1896, Oct. 6) 12 national banks, with \$2,257,588 of loans outstanding. Of this \$82,252 was on demand secured by individuals and firms, \$78,377 secured by stocks, \$1,661,-249 on time secured by individuals and firms, \$435,712 on time secured by stocks, bonds, and mortgages. In 1896 the savings banks of L. had \$2,803,368 deposits from 12,346 depositors, or an average of \$227.07 to each depositor. The New Orleans Clearing-house reported clearings (1896) \$327,544,213. In 1902 the eapital stock of banks of all classes in L. was as follows: national banks \$4,256,700; state \$4,612,050; total \$8,868,750; elearing-house exchanges at New Orleans, \$663,918,045.

History.—De Soto (q.v.) and his followers are believed to have been the first Europeans who visited L., reaching the Mississippi river 1541. Marquette (q.v.) descended the river from Canada 1673, and La Salle (q.v.) following Marquette's course, took possession of the country in the name of Louis XIV. 1682, Apr. 9, and named it Louisiana. The first settlement was made by Iberville (q.v.) 1699 at Biloxi, now in Miss., and the next by his successor Bienville on Dauphin Island and at Mobile, now in Ala., 1702. About 1706 Bienville established a colony on the site of New Orleans. the province of L. was granted to the Western Company or the Company of the Indies, which became connected with John Law's celebrated and disastrous Mississippi scheme; and 1718 the first permanent settlement was founded at New Orleans. The Western Company surrendered its grant to the crown 1732, and the French managed the colony till 1762, when the entire province of L. was ceded to Spain. The advance in population and general prosperity that had characterized French

control was then checked for 38 years. In 1800, to the gratification of its inhabitants, the province was re-ceded to France, and 1803 it was sold by France to the United States for \$15,000,000. The territory then described under the name L. comprised all the vast region w. of the Mississippi river not occupied by Spain, as far n. as the British territory. From it have since been organized the states of Ark., Io., Kan., La., Minn., Mo., Neb., Or., Colo., N. Dak., S. Dak., Washington, and Mont., and the territories of Id., Wyo., and Ind. Terr. Possession was taken and the American flag raised 1803, Dec. 20. In the following year the lower portion, including the present state of La. w. of the Mississippi and a part e. of that river, was constituted the Terr. of Orleans, and all the country n. and w. of it the Terr. of Louisiana. In 1810 the country between the Mississippi and the Amite and Pearl rivers was annexed to the Terr. of Orleans. 1812, Apr. 14, the terr. was admitted into the Union as the state of Louisiana, and July 4 the name of the former Terr. of La. was changed to the Terr. of Missouri. The young state rendered signal service to the govt. in the war of 1812-15, the crowning battle being fought at New Orleans 1815, Jan. 8, and resulting in the total defeat of the British. (See Jackson, Andrew). Between that event and the beginning of the civil war. the state prospered greatly, adopted new constitutions 1845 and 52, and saw its chief city become the second cotton port of the world. After the election of Pres. Lincoln 1860, Nov., the gov. of La. convened the legislature Dec. 10, which called a popular convention 1861, Jan. 23, and this convention passed an ordinance of secession Jan. 26. Between the special meeting of the legislature and the popular convention, the state authorrules took possession of Forts Jackson and St. Philip on the Mississippi river, 75 m. below New Orleans, and Fort Livingstone in Barataria Bay and Fort Pike at the entrance of Lake Ponchartrain, as well as the U.S. arsenal with large military stores at Baton Rouge, and the U. S. mint and custom house in New Orleans. On Mar. 21 the state ratified the Confederate constitution. first Federal operations in the state were in 1862, Apr., and resulted in the capture of New Orleans. (See FAR-RAGUT, DAVID GLASCOE: JACKSON, FORT, and FORT St. Philip, Capture of). Gen. Benjamin F. Butler commanded the city May 1—Dec. 14; he was supersched by Nathaniel P. Banks. While naval and military operations were in progress on the Red and Atchafalaya rivers, Gen. Butler ordered an election for representatives in congress from the two districts in possession of the Union forces, only qualified voters who had taken the oath of allegiance after the capture of New Orleans being allowed to vote. He also organized local courts in New Orleans, and a provisional court for the state was instituted by order of Pres. Lincoln 1862, Dec. In 1863, Apr., the pres. appointed a number of judges of the state supreme court, and Dec. 8 authorized an election for state officers in 11 whole parishes and parts of 6.

others-all within the Federal lines-which was held 1864, Feb. 22. Michael Hahn was elected gov., inaugurated Mar. 4, and given powers of a military gov. by the pres. Mar. 15. A constitutional convention was held Apr. 6-July 23, which adopted a constitution abolishing slavery. This was ratified by the people Sep. 5. The convention also elected 5 Union representatives in congress, but they were not seated, nor was the constitution recognized by congress. The legislature elected 1865, Nov., chose democratic U.S. senators, who were not admitted to seats. In 1866 there was a riot in New Orleans over political matters, which created much excitement throughout the country. In 1867 La. and Tex. were designated as the 5th milit. dist. under the Reconstruction Acts, and placed under command of Gen. Philip H. Sheridan Mar. 19. He was removed by Pres. Johnson in Aug., and Gen. Mower held command till the arrival of Gen. Winfield S. Hancock Nov. 29. A second constitutional convention was held in New Orleans from 1867, Nov. 23-1868, Mar. 9, and the constitution then framed was ratified by the people Apr. 17,18. the same time a republican gov.—Henry C. Warmouth and a legislature republican in both houses were elected. Gen. Hancock was removed Mar., and was succeeded by Gen. R. C. Buchanan. The state was admitted to representation in congress by an act of June 25; on the 29th the legislature ratified the XIVth amendment to the Federal constitution and elected U.S. senators; and on the inauguration of Gov. Warmouth July 13, the state was formally placed under control of local civil authorities. In 1869, Feb. and Mar., both houses of the legislature ratified the XVth amendment to the Federal constitution. During 1868-78 the state was the subject of political turmoil that led to the organization of two legistures and the inauguration of republican and democratic govs. at the same time; the loss of the state's electoral vote 1872; the intervention of Federal authority; and fatal encounters between the military forces of both political parties. From 1864 till 1881 New Orleans was the cap., but in the latter year the seat of govt. was restored to Baton Rouge. A new constitution was adopted 1879, Dec. 2, and since then the state has been under democratic control without political disturbance.

Government.—The executive authority is vested by the constitution in a gov., elected for 4 years, salary \$5,000 per annum; the legislative authority in a general assembly, comprising a senate of 38 members elected for 4 years, and a house of representatives of 98 members elected for 2 years, salary of each \$6 per day, mileage 20c.; and the judicial authority in supreme, district, superior criminal, recorder's, and parish courts, and justices of the peace. The supreme court consists of a chief justice and 4 assoc. justices, salary of each \$5,000 per annum; salary of district court judges \$3,500-\$4,500 each. The lieut. gov. receives a salary of \$8 per day; sec. of state \$1,800 per annum; treas. \$2,000; auditor

\$2,500; attor. gen. \$3,000; adjt. gen. \$2,000; supt. public instruction \$2,000; commissioner of agriculture and immigration \$2,000; collector of customs at New Orleans \$7,000; collector of internal revenue \$3,875; surveyorgen. \$1,800; supt. U. S. mint \$3,500. There were (1901, Jan. 1) 1,196 post-offices in La., of which 35 were presidential, 1,161 fourth-class, and 339 money-order offices.

The successive govs. with their terms of service since the purchase of the territory from France are as follows: Terr.: W. C. C. Claiborne, 1804–12; State: W. C. C. Claiborne 1812–16; Jaques Villere, 1816–20; Thomas B. Robertson, 1820–22; H. S. Thibodeaux (acting), 1822–24: Henry Johnson 1824–28; Peter Derbigny 1828–29; A. Bauvais (acting) 1829–30; Jacques Dupré (acting) 1830; André B. Roman 1830–34; Edward D. White 1834–38; André B. Roman 1838–41; Alexander Mouton 1841–45; Isaac Johnson 1845–50; Joseph Walker 1850–54; Paul O. Hebert 1854–56; R. C. Wickliffe 1856–60; Thomas O. Moore 1860–62; George F. Shepley 1862–64; Michael Hahn 1864–65; James M. Wells 1865–67; Benjamin F. Flanders 1867–68; Joshua Baker 1868; Henry C. Warmouth 1868–72; J. F. McEnery (claimant), William Pitt Kellogg (recognized)1872; William Pitt Kellogg 1872–77; Stephen B. Packard 1877–78, Francis T. Nichols 1878–80; Louis A. Wiltz 1880–81; S. D. McEnery 1881–88; Francis T. Nichols 1888–92; Murphy J. Foster 1892-1900; William H. Heard, 1900-04.

Counties, Cities and Towns.—L. was divided 1890 into 59 counties locally called parishes. In 1880 the most populous parishes were: Orleans 216,090, St. Landry 40,004; Caddo 26,296, Rafides 23,563, St. Mary 19,891, and Terrebonne 17,957; and cities and towns: New Orleans 216,090, Shreveport 8,009; Baten Rouge 7,197; New Iberia 2,709; and Gretna 2,396. In 1890 the chief parishes were: Orleans 242,039; St. Landry 40,250; Caddo 31,555; Rafides 27,642; E. Baton Rouge 25,922; Avoyelles 25,112; Claiborne 23,312; St. Mary 22,416; Lafourche 22,095; Iberia 20,997; and Terrebonne 20,167; and cities and towns: New Orleans 242,039. Shreveport 11,979; Baton Rouge 10,478; New Iberia 3,447; Gretna 3,332; Monroe 3,256.

Politics.—Biennial elections for members of congress; quadrennial for legislature and state officers; state elections, Tuesday after the third Monday in Apr.; legislature meets biennially in even numbered years on second Monday in May; limit of session 60 days. Voters must be registered. Idiots, insane, and persons convicted of treason, embezzlement of public funds, illegal voting, bribery or like crime punishable by hard labor or imprisonment, are excluded from voting. The state govt. (1890) was democratic with a party majority of 28 in the senate, 74 in the house, 102 on joint ballot. L. has 9 electoral votes. Her votes for pres. and vice-pres. have been as follows: 1812, James Madison and Elbridge Gerry 3; 1816, James Monroe and Daniel D. Tompkins; 1820, James Monroe and Daniel D. Tompkins; 1824, Andrew Jackson 3, John Adams 2 for pres., John C. Cal-

houn 5 for vice-pres.; 1828, Andrew Jackson and John C. Calhoun 5; 1832, Andrew Jackson and Martin Van Buren; 1836, Martin Van Buren and Richard M. Johnson; 1840, William Henry Harrison and John Tyler; 1844, James K. Polk and George M. Dallas; 1848, Zachary Taylor and Millard Fillmore 6; 1852, Franklin Pierce and William R. King; 1856, James Buchanan and John C. Breckinridge; 1860,64 no vote; 1868, Horatio Seymour and Francis P. Blair; 1872, not counted, 8; 1876, Rutherford B. Hayes and William A. Wheeler; 1880, Winfield S. Hancock and William H. English; 1884, Grover Cleveland and Allan G. Thurman; 1892, Grover Cleveland and Allan G. Thurman; 1892, Grover Cleveland and Adlai E. Stevenson; 1896, William J. Bryan and Arthur Sewall; 1900, William J. Bryan and Adlai E. Stevenson.

Population.—(1810) white 34,311, free colored 7,585, slaves 34,660, total 76,556; (1820) white 73,383, free colored 10,476, slaves 69,064, total 153,407; (1830) white 89,441, free colored 16,710, slaves 109,588, total 215,739; (1840) white 158,457, free colored 25,502, slaves 168,452, total 352,411; (1350) white 255,491, free colored 17,462, slaves 244,809, total 517,762; (1860) white 357,456, free colored 18,647, slaves 331,726, total 708,002; (1870) white 362,065, free colored 364,210, total 726,915; (1880) white 454,954, free colored 484,992, total 939,946; (1890, 1,-118,587; (1900) 1,381,625.

LOUISIA'NA: city in Pike co., Mo.; on the Mississippi river and the Chicago and Alton, Chicago Burlington and Quincy, and the St. Louis Keokuk and Northwestern railroads; 25 m. s. of Hannibal, 101 m. n.e. of Jefferson City. It contains 12 churches, public library, Bapt. college, high school, 3 flour mills, 4 planing mills, 2 stove foundries, 4 tobacco factories, and (1889) 1 national bank (cap. \$50,000) and 1 state bank (cap. \$25,000). Pop. (1870) 3,639; (1880) 4,325; (1890) 5,071; (1900) 5,131.

LOUIS NAPOLEON.

LOUIS NAPOLEON (CHARLES LOUIS NAPOLEON) BONAPARTE); titular designation, Napoleon III., Emperor of the French: 1808, Apr. 20-1873, Jan. 9. (reigned 1852-70); b. Paris, in the palace of the Tuileries; third son of Louis Bonaparte, brother of the first emperor: see BONAPARTE FAMILY. His birth was celebrated with great rejoicings throughout France, as that of an heir to the imperial throne, for by the law of succession (dated 28th Floreal, year 12, and 5th Frimaire, year 13), the crown, in default of direct descendants of the Emperor Napoléon himself—and he at that time had none—could be inherited only by the children of two of his brothers, Joseph and Louis. Joseph also was childless, and the sons of Louis became heirs-apparent. After the restoration of the Bourbons, the ex-queen Hortense, mother of L. N., went into exile, carrying with her her two sons, Napoléon Louis and Louis Napoléon. Since 1810, she had been separated from her husband. L. received his carly education in the castle of Arenchberg, on the shores of Lake Constance, where his mother resided. He was furnished with the best tutors and was an industrious pupil. At the gymnasium of Augsburg, he showed a taste for history and the exact sciences. love of athletic sports was equally conspicuous: he was one of the best fencers, riders, and swimmers in the school. In Switzerland, his inclination and aptitude for military strategy, especially in artillery and engineering, was developed. He even served as a volunteer in the federal camp at Thun, and at a later period wrote Manuel d'Artillerie (Zürich 1836). In 1830, when an insurrection broke out in the pontifical states, L. N. and his brother took part in it. The latter died at Forli, and L. N. himself was dangerously ill at Ancona, and was saved only by the tender devotedness of his mother. Austrian occupation of Ancona forced them to quit the city sccretly; they went to France but their incognito being betrayed, they were expelled by Louis Philippe after a few days, and proceeded to England, whence they soon returned to Switzerland. Such, however, was the charm of N.'s inherited name, that the chiefs of the Polish insurrection offered him, 1831, the command of their legions 'as the nephew of the greatest captain of all ages,' also the crown of Poland. The capture of Warsaw by the Russians, however, put a stop to further proceedings in this matter, and L. N. returned to his silent and sombre studies. The death (1832, July 22) of the Duke of Reichstadt, sometimes called Napoléon II., only son of the first emperor, opened the future to his ambitious hopes; and even his supporters admit that, from this data forward, his whole life, speculative and practical, was devoted to the realization of what now became his 'fixed idea;' viz., that he was destined to be the sovereign of France. He published several works, 1832-36, which not only kept him prominently before the French public, but evoked considerable political and

LOUIS NAPOLEON.

intellectual sympathy: among these were Rêveries Politiques, Projet de Constitution, Deux Mots à M. de Chateaubriand sur la Duchesse de Berri (in verse), and Considérations Politiques et Militaires sur la Suisse. 1836, believing in the instability of the throne of Louis Philippe, and in the general disaffection of the bouryeoisie, encouraged also by the proofs of vivid attachment to his person displayed by nearly the whole demoeratic party, but, above all, confiding in the grandeur of those memories which his name recalled, he, with a few associates, among whom was the Comte de Persigny, since better known, made his famous attempt at a coup d'état at Strasbourg. It was a ludierous failure. L. N. was taken prisoner under humiliating eireumstances, and after some days eonveyed to Paris; but the government of Louis Philippe was afraid to bring a Bonaparte to trial—as in such a case it could not rely on the impartiality of a French jury—and in consequence shipped him off to America. The illness of his mother soon caused him to return to Europe. He found her dying; two months later, he received her last sighs (1837, Oct. Although the affair of Strasbourg had naturally enough eaused many people to doubt the talent and partieularly the judgment of L. N., still Louis Philippe, who was, politically, an extremely timid monarch, dreaded some new conspiracy, and, in consequence, the French government demanded of Switzerland the expulsion of the obnoxious prince from its territories, M. Molé aetually enjoining the French ambassador to request his passports, in case of a refusal. Switzerland was violently agitated, and was almost on the point of going to war for the distinguished refugee (who was, in faet, a Swiss citizen), when the latter resolved to prevent a rupture by leaving his adopted country. He went to England, and settled in London. With certain members of the British aristocracy, he came to live on a footing of intimacy, and there can be no doubt that he was also an object of languid wonder and interest to the community generally, but he impressed nobody with a belief in his future and his genius; nay, Englishmen erred so far as to suppose that the 'silent man' was merely 'dull.' In 1838, he published in London his Idées Napoléoniennes, which, read in the light of subsequent events, are very significant. Europe generally regarded them as idle dreams; but in France the book went through numerous editions. In 1839, L. N. was in Seotland, and took part in the celebrated Eglinton tournament. Next year (1840), taking advantage of the sentiment aroused by the bringing home the aslies of his unele from St. Helena, he made another attempt on the throne of France at Boulogne. It was a failure even more grotesque than the one at Strasbourg, and undoubtedly provoked some contempt for its author in the public mind. Captured on the shore, while endeavoring to make his escape to the vessel that had brought him from England, L. N.

LOUIS NAPOLEON.

was again brought to trial, and condemned to perpetual imprisonment in the fortress of Ham. Here he composed several works, Aux Mânes de l'Empereur; Fragments Uistoriques; Analyse de la Question de Suisse; Réponse à M. de Lamartine; and Extinction du Paupér-isme, wrote political articles for the democratic journals, and actually took part in editing the Dictionnaire de la Conversation, a valuable French encyclopedia. After an imprisonment of more than five years, he made his escape, 1846, May 26, by the help of his friend and fellow prisoner, Dr. Conneau, in the disguise of a workman, and gained the Belgian frontier, whence he returned to England. The revolution of 1848, Feb., in which Louis Philippe lost his throne, caused him to hurry back to France, where he professed himself devoted to the views of the Provisional Government; the latter, however, requested him to leave the country. This he promised to do; but being elected deputy for Paris and three other departments, he took his seat in the constituent assembly, 1848, June 13. A stormy debate followed, and on the 15th he resigned his seat, and, either from policy or patriotism, left France. Recalled to France in the following Sep. by a quintuple election, i.e., a choice in five depts., he again appeared in the assembly, and at once, through the agency of his zealous associates, commenced his candidature for the presidency. The masses were—rightly or wrongly—thoroughly in his favor. Out of seven and a half million of votes, 5,562,834 were recorded for Prince L. N.; General Cavaignac, who was next to him, obtaining only 1,469,166. This fact is declared by the partisans of the emperor to be an absolute proof of his popularity, for at this period he had neither power to force, nor money to bribe opinion. Dec. 20, as the president, he took the oath of allegiance to the republic. For a few days, concord seemed re-established between the different political parties in the assembly; but the beginning of 1849 witnessed the commencement of a series of struggles between the president and his friends on the one side, and the majority of the assembly on the other—the latter being profoundly penetrated with the conviction that L. N. was devoted not to the interests of the republic, but to his own. The French expedition to Italy and the siege of Rome were, above all, the causes of violent discussion in the chambers. This anarchic condition of things, in which, however, the president tenaciously held his ground, was summarily ended by the famous or infamous (for opinions differ) coup d'état, The principal actors in this midnight 1851, Dec. 2. deed were the president himself, M. de Morny, M. de Maupas, and Gen. St. Arnaud. The circumstances that marked it were of necessity odious, and even atrocious; and there cannot be a doubt that it produced in the mind of Europe a distrust of the honesty of L. N., which was never during his life wholly removed. His success was certainly magnificent, but the cost also was enor

LOUIS PHILIPPE.

mous. The feeble attempts at an armed resistance in Paris were put down by the military, who were favorable to the president, and under the command of his accomplices. A rigorous system of repression was put in force both in Paris and in the departments, and the deportation of citizens to Cayenne and Algeria became painfully familiar to the European public. France, as a whole, however, whether wearied of the incompetent democrats, or (as Kinglake supposes) 'cowed' by the terrible audacity of the president, appeared to acquiesce in his act of Dec. 2d; for when the vote was taken upon it on the 20th and 21st of the same month, he was reelected president for ten years with all the powers that he demanded, by more than 7,000,000 suffrages. His enemies affirm that these were obtained by terrorism; however that may have been, the same value cannot be placed on this as on the previous expression of national confidence. L. N. was now emperor in fact; nothing was wanting but the name. This was assumed exactly a year after the coup d'état, in accordance, as it appeared, with the wish of the people. L. N. was a thinker, but no administrator. His reign was an era of corruption, thinly disguised by general financial prosperity and the splendor of the imperial court. He had no gift of discerning and calling around him trustworthy and capable officials. Among the events of his reign were the conspiracies against him (1853), the attempts at assassination (by Pianori 1855, and Orsini 1858), the Anglo-French alliance and the Crimean war (1854-56), the Franco-Italian war (1859), and the Mexican campaign (1863). In 1870, L. N. declared war against Prussia; and, after a swift succession of terrible defeats, he surrendered himself to the Germans a prisoner at Sedan, in September. See Franco-German War. Till the conclusion of peace he was confined at Wilhelmshöhe. In 1871, Mar., he joined the empress at Chiselhurst, Kent, England, and resided there till his death, 1873.— In 1853 the emperor married Eugénie Marie, Countess of Their son, Eugène Louis Jean Joseph, Prince Imperial of France (1856–79), was in the field with his father 1870, but after the fall of Sedan escaped to England, where he entered the Woolwich Military Acad., and 1875 completed with distinction a regular course of Volunteering to serve with the English artillery in the Zulu campaign of 1879, he was killed in June, when reconnoitering, by a party of Zulus in ambush.

LOUIS PHILIPPE, $l\hat{o}$ - \tilde{e}' fe- $l\tilde{e}p'$, King of the French: 1773, Oct. 6—1850, Aug. 26 (reigned 1830–48); b. at the Palais Royal, Paris; eldest son of Louis Philippe Joseph, Duke of Orleans, and descended from the younger bro. of Louis XIV. He received at his birth the title Duke of Valois, and afterward that of Duke of Chartres. His education was intrusted to the care of the celebrated Madame de Genlis. He entered the National

LOUIS PHILIPPE.

Guard, and became a member of the Club of Friends of the Constitution, afterward that of the Jacobins. Together with his father, he renounced his titles, and assumed the surname Egalité. He showed both courage and capacity in the war; but his situation became very dangerous after the unsuccessful battle of Neer. winden, in which he commanded the centre. He was included in the order for arrest issued against Dumouriez, and 1793, Apr. 4, escaped with him into the Austrian territory. He sought in Switzerland a place of security for his sister Adelaide, wandered about among the mountains four months, and accepted a situation as teacher of geography and mathematics in a school at Reichenau, near Chur, assuming the name Chabaud-Latour. He afterward wandered for some time in n. Europe, and then went to the United States. In 1800 lie took up his abode at Twickenham, near London, with his two younger brothers, both of whom soon died. 1309, he married Marie Amelie, daughter of Ferdinand I, of the Two Sicilies. On the fall of Napoleon, he hastened to Paris, where he was received with distrust by Louis XVIII. After the second restoration, he recovered his great estates, which the imperial govern-ment had sequestrated. Disliked by the court, he was very popular in Paris. He kept aloof, however, from political intrigues; and the three bloody days of the revolution of 1830 were nearly over eve he was brought forward, the banker, Laffitte, proposing in the provisional committee his appointment as lieut.gen. of the kingdom, from which he proceded to the acceptance of a constitutional throne, 1830, Aug. 9. He defended his con luct toward the elder Bourbons by protesting that he acted for the welfare of France. He cultivated peaceful relations with foreign powers, sought to strengthen his throne by gaining the support of the middle classes, and repressed all the extreme parties by what became known as the Juste-Milieu (q.v.) policy. The extreme democrats hated him, and frequent attempts were made on his life, by infernal machines and otherwise. country prospered under his government, but a demand for reform in the electoral system became loud and general, and was unwisely opposed by the king and the Guizot (q.v.) ministry; while the conduct of the king in the matter of the marriages of the queen of Spain and her sister, manifesting a disregard of every consideration but the interests of his own family, evoked strong indignation throughout Europe. The French nation became excited; 'reform banquets' began to be held; the government attempted to prevent them by force; insurrection my movements ensued in the streets of Paris 1843 Fab. 22, and the 'Citizen King' saw with alarm that the National Guard could not be expected to support him. Feb. 24 he abdicated in favor of his grandson, the Count de Paris; but the chamber of deputies refused to acknowledge the boy as king. I. F., de-

LOUIS QUATORZE—LOUISVILLE.

serted by his courtiers, fled with his queen to the coast of Normandy, concealed himself for some days, and at length found opportunity of escaping in a British steamboat to Newhaven under the name of Mr. Smith. The brief remainder of his life was spent in England, and he died at Claremont.

LOUIS QUATORZE, n. lô'ē kâ-tawrz': name given to a style of architecture and internal decoration prevalent in France in the reign of Louis XIV. (1643-1715). It is characterized by a deterioration of simplicity and good taste and a striving after pomp and magnificence in every detail. The windows are larger, the rooms more lofty, than in buildings of earlier date, free use is made of Roman columnar orders and rustication. In internal decoration mirrors are a distinctive feature, accompanied by a lavish use of gilt stucco work, scroll and shell patterns being the most common.

LOUIS QUINZE, n. lô'ē kângz: name sometimes given to the style of architecture and internal ornamentation prevalent in France during the reign of Louis XV.

LOUISVILLE, lô'i-vil: chief city of Ky., cap. of Jefferson co.; at the Falls of the Ohio river, about 600 m. below Pittsburgh, and 400 m. above Cairo; lat. 38° 14′ 57″ n., long. 85° 47′ 40″ w.; popularly known as the Falls City. It occupies a great plateau on the s. bank of the Ohio, 70 ft. above low water. The river forms on its northern boundary a graceful curve eight m. in length and, with its current obstructed by a ledge of rocks which, like a dam, causes the rapids or falls, spreads out into a deep and

beautiful lake a mile in width.

The plan of Louisville presents a series of streets running e. and w., parallel with the river, crossed at right angles by streets running n. and s. Broadway is 120 ft. wide; Main, Market, and Jefferson streets each 90 ft.; the others, with unimportant exceptions, are 60 ft. wide. The principal streets are paved with granite or asphaltum; their sidewalks are broad and bordered with shade trees. these streets, the residences, usually of stone or brick, stand on lots large enough for ventilation and for shrubbery, flowers, and trees on a bluegrass sward. There is a combined length of streets and alleys of more than 200 m. The streets are well paved and well lighted, and electric cars provide adequate transportation. There is an abundant supply of natural gas for heating. The location of Louisville gives it command of the 2,000 m. of river system of the state, including the six interstate navigable rivers, Licking, Kentucky, Salt, Green, Cumberland, and Tennessee. To this great length of navigable rivers the railroads within the state add 3,600 m. of land transporta-Moreover, by three bridges across the Ohio, the city shares the advantages of the great railroad system of the whole country.

Thus admirably located as the centre of collection and redistribution for vast areas of rich agricultural lands and virgin forests and inexhaustible mines of coal and iron,

LOUISVILLE.

Louisville has become noted for manufactures. Without enumerating unimportant works, there are 1,600 manufacturing establishments, with combined capital of \$30,000,000, employing 25,000 hands, with annual products to the value of \$46,000,000. In a single year the distilleries of Louisville produce 28,000,000 gallons of Bourbon whisky, the 18 tobacco warehouses, some of them three stories high, covering an acre of ground, deal with 161,640 hogsheads of tobacco, the tanners make 12,000,000 lbs. of leather, the cement mills grind 2,000,000 bbls. of cement, the factories spin and weave 7,500,000 yds. of jeans, the Dennis Long foundry uses 90,000 tons of iron in making gas and water pipe, the Avery plow works make 400,000 agricultural implements, the Kentucky wagon works manufacture 30,000 wagons, and the Ballard mills turn out 365,000 bbls. of flour.

The fifth district of Kentucky is the largest producer of Bourbon whisky in the world, and the city of Louisville produces a large proportion of its enormous yield. Besides being the most valuable industry of the city of Louisville, it is also the best of taxpayers, as the U.S. govt. well understood when its internal revenue department collected from this district (1894) \$12,281,356 as the tax on 13,634,830 gallons which were withdrawn from

the government warehouses.

There are 5 daily, 25 weekly, and 18 monthly and semimonthly publications, of which the *Courier-Journal* has become the widest known through the national reputation of its famous editors, George D. Prentice (q.v.) and Henry

Watterson (q.v.).

The educational system is not surpassed by any city of the same class. At an expense of \$500,788 in 1894, there were 42 free schools, with 533 teachers, and 25,000 pupils enrolled. Four of these free schools, the Male High School, the Female High School, the Normal School, and the Manual Training School, are really colleges, providing courses of study and training sufficient for all practical purposes. The private schools are numerous and of the best type; they have in attendance about 5,000 pupils. Among them are 5 medical colleges.—Medical teaching began in Louisville in 1833, when the "Medical Institute," which afterward became the medical department of the University of Louisville, was incorporated by an act of the legislature. The physicians who thus inaugurated medical education in Louisville, and whose fame should share the glory this enterprise has since attained, were William C. Galt, Coleman Rogers, A. G. Smith, John P. Declary, Llewellyn Powell, J. P. Harrison, R. H. Broadnax, R. P. Gist, and J. Y. Dashiell. The good work thus begun by these pioneer physicians, more than sixty years ago, has prospered and continued to increase until the five medical schools, the University, the Kentucky, the Louisville, the Hospital, and the Homeopathic, now flourishing in the city, rank among the very best in the country. average of 1,500 students attend these five schools each year, and have here every advantage which learned pro-

fessors, abundant clinics, numerous subjects, and a nigh standard of medical literature can afford. The professors of the different schools publish five first-class medical periodicals, and maintain as many learned medical societies. There are also two theol. seminaries, the Southern Baptist Theological Seminary, and the Louisville Presbyterian (South) Theological Seminary, both well endowed and in a flourishing condition 1 law school, 1 school of dentistry, 2 schools of pharmacy, 1 school for the blind, and a number of schools of music, art, etc. Several of the private academies for young women take rank among the very best in the land. The only public library is that of the Polytechnic Soc., about 50,000 vols. There are, however, private libraries, e.g., of the Bapt. theol. seminary, and of the law and medical depts. of the Univ. of Louisville, which are practically public. Among the large and valuable libraries in the hands of private individuals, to which the public have partial access, is that owned by Reuben T. Durrett, LL.D.—one of the largest collections in the country; it is in daily public use almost as if it were a public library.

There is ample provision of charitable institutions: 35 hospitals, asylums, orphanages, infirmaries, reformatories, homes, etc., offer help for almost every class of afflicted

humanity.

The preparation of three public parks was begun 1892. Their locations were chosen with a view to variety in scenery—Cherokee park, 300 acres in the e. part of the city, an undulating surface cut into depths and heights by water-courses; Iroquois park, 550 acres in the s. part, a hilly tract 300 ft. above the city; and Shawnee park, 167 acres in the w. part, a plain on the w. bank of the Ohio.

The buildings of Louisville, public and private, accord with a high architectural standard. The U. S. post-office, the Jefferson court-house, and the city-hall are noble specimens of public buildings; while the Louisville medical college, the Bamberger-Bloom store, the Courier-Journal office, the Galt House, the Commerce, the United States national bank, and the Louisville trust company show what private enterprise of a public trend can do in beautifying a city. In residences Louisville has a tasteful and convenient style of its own. A charming feature of the buildings generally, especially of the private residences, is the ample ground on which they stand.

Church edifices number (1895) 176; some of them like the Rom. Cath. cathedral, Warren Memorial Chh., Broadway Bapt. Chh., Calvary Chh., and St. Andrew's Chh. are fine specimens of ecclesiastical architecture. These churches are divided among 14 denominations—Bapt. 41, Meth. 32, Rom. Cath. 24, Presb. 22, Prot. Episc. 17, Disciples 11, Lutherans 8, Israelites 5, Evangelical Assoc. 2, Spiritualists, and Unitarians, Christodelphians, Seveth-day Adven-

tists, and United Brethren, each one.

The banking capital is ample. There are (1902)8 national and 9 state banks, combined capital about \$9,000,000, with surplus amounting to nearly one-half their capital

stock. There is a clearing-house connected with the banks, whose operations in the year ending 1902, Sept. 30, aggregated \$489,822.665, an increase in a year of \$35,851,081.

There is no city on the continent that ranks higher in healthfulness. The death rate is less than 16 to the thousand, and the place shows little liability to epidemics or

malignant diseases.

The assessed value of property for 1903 was about \$129,500,000, on which a tax of \$2.58 to the hundred was laid. The bonded debt was \$8,692,000; the sinking fund was fully supplied from licenses and taxation to pay the annual interest, and to pay the debt itself when it falls due.

Louisville, like many other cities, originated by an incident and without definite design or foresight. George Rogers Clarke, on his way to the conquest of the Illinois country, landed his ragged militia on an island at the Falls of the Ohio, 1778, May 27, for the purpose of preventing them from deserting when he should inform them of their destination and begin disciplining them for the hard fight in prospect against fearful odds. Such stores as he could not carry with him he left on this island in charge of some families, consisting probably of 49 whites and one negro, who had come with him down the Ohio from Redstone, as immigrants to the west. These families became the founders of Louisville. In the spring of 1779 they moved to the mainland, and Apr. 17, with others who had joined them, laid out a town which they named Louisville, in honor of Louis XVI. of France, who was then helping the colonists in their rebellion against England. Gen. Clarke on his way to the Illinois country having received a letter from Col. Campbell informing him that King Louis had espoused the American cause, not only made good use of this news among the French at Kaskaskia, but induced the few settlers at the Falls to name their town after the benefactor. The Va. legislature incorporated the town 1780, May 1, gave it 1,000 acres of the forfeited land of Dr. John Connolly, the tory, and appointed 9 trustees for its government. The town was governed by trustees for 49 years until 1828, when the Kentucky legislature gave it a charter and lodged its governing powers in a mayor and 10 councilmen. To this first charter the people not only of Louisville, but of Ky., owe the first steps taken toward free education (1829). In 1851, a second charter was adopted, which added to the governing power a board of 12 aldermen, and increased the number of councilmen to 24. Under this charter also were established the school-board, the water-works, the sinking fund, the board of health, and the police and fire depts. Two other charters have since been adopted, in 1870 and in 1892. The last charter added to the governing power a board of safety and a board of public works, the effect of whose cooperative action is now being tested in practice.

The pop. does not appear in the U.S. census until the year 1800, and it is then wrongly given. It was probably 190 in 1780, 350 in 1790, and 600 in 1800. The U.S. cen-

LOUNSBURY-LOURDES.

sus thereafter reports it as follows: (1810) 1,357,(1820) 4,012, (1830) 10,341, (1840) 21,210, (1850) 43,194, (1860) 68,033, (1870) 100,753, (1880) 123,758, (1890) 161,129, (1900) 204,731.

thor and teacher: 1838, Jan. 1————; b. Ovid, N. Y. After graduating at Yale in 1859, he was employed as a writer on Appleton's Cyclopædia till 1862, when he entered the army as 1st lieut. volunteers. In 1871 he was elected prof. of English in Sh effield Scientific School, Yale University. He was one of the leading contributors to The Century Dictionary, being responsible for the department of Middle English (Chaucer). He published History of the English Language (1879, revised ed. 1894); James Fenimore Cooper in the American Men of Letters series (1883); and Studies in Chaucer: His Life and Writings (3 vols., 1891). His life of Cooper is the best that has yet appeared, and an admirable specimen of literary biography, while the Studies in Chaucer at once took rank as an authority on that subject.

LOULE, lô'lā: thriving town of Portugal, province of Algarve 130 m. s.e. of Lisbon; on a hill amid groves of cork trees and pomegranates. Pop. (1890) 18,872.

LOUNDER, n. lôn'der or lown'der [Gael. lonn, strong, powerful]: in Scot., a swinging heavy stroke; a powerful blow: V. to beat with severe strokes. Loun'der-ing, imp. Loundered, pp. lôn'derd.

LOUNGE, v. lownj [Dut. lunderen, to dawdle; leuteren, to vacillate, to loiter: Low Ger. lungern, to lie abed: Bav. lunzen, to slumber: comp. Gael. lunndach, indolent]: to live lazily; to loll or move about listlessly; to spend the time in idly moving about; to recline at ease: N. an idle gait; a stroll; a place which idlers frequent; a kind of sofa. Loung'ing, imp.: Add. spending the time in loitering; reclining at ease. Lounged, pp. lownjd. Lounger, n. lownj'er, one who strolls or moves lazily about: an idler. Note.—Skeat refers Lounge to OE. lungis and longis, 'a dreaming, tall, idle fellow.' This sense Littré supposes due to a pun having reference to L. longus, long.

LOUR: see Lower 2.

LOURDES, lôrd: town in s. France, cap. of a canton, dept of Hautes-Pyrénées; on the right bank of the Gave de Pau, 24 m. s.e. of Pau. The region is picturesque: the town is at the base of a bare rock about 500 ft. high, on which is a feudal castle now used as a prison. There are remarkable grottoes in the vicinity. The neighborhood is noted as producing a very valuable race of miles cows.—Pop. (1891) 6,182; (1896) 7,758.

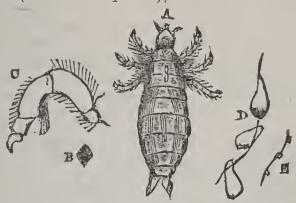
The fame of the place is connected with alleged appearances of the Virgin Mary to two peasant girls, 1858,

LOURENZO MARQUEZ-LOUSE.

at the grotto of Massavielle, and with the miraculous cures since wrought by prayer at her shrine and by use of the waters of the fountain there. A great church reared above the grotto, was consecrated 1876 in presence of 35 cardinals and other ecclesiastical dignitaries. 1872 about 20,000 pilgrims from various countries visited the shrine at the grotto. The water is sold in large quantities. In many instances, at least, wonderful healing seems unquestionable; but the fact is explained on widely differing theories—by some as a supernatural gift; by others as due to the purely natural stimulus of faith and hope on susceptible temperaments, especially in diseases depending on nervous disorder. There is a large trade in rosaries and similar objects.—See Faith CURE.

LOURENZO MARQUEZ, lô-rĕn'zō mâr-kĕs', or Lourenço Marques, lô-rĕn'sō mâr-kĕs': southernmost of the Portuguese stations on the e. coast of Africa, and is at the head of Delagoa Bay. The place is but a mass of huts, and its site is very unhealthful; but its position and its harbor render it the natural seaward outlet of the whole Transvaal region. A railway connecting it with the head of the Transvaal has been projected: a concession was obtained from the Portuguese government 1880, but was very unpopular with the Portuguese people; and progress has been hindered by the political circumstances of the Transvaal. Pop. about 3,000.

LOUSE, n. lows, Lice, n. plu. līs [Dut. luis; Ieel. lús, plu lyss; Ger. laus, plu, läuse; W. llau, a louse]: a small insect of different species which infests the bodies of men and animals: Louse, v. lowz, to elean from liee. Lousing, imp. low'zing. Loused, pp. lowzd. Lousy, a. low'zi, infested with liee; very mean; contemptible. Lousily, ad. -zi-li. Lou'siness, n. -zi-nes, state of abounding in lice.—Louse (Pediculus), is a genus of insects, type of a very numerous family, which forms the order Parasita or Anoplura. The body is flattened, almost transparent; the segments both of the thorax and abdomen are very distinct; the mouth is small and tubular, inclosing a sucker; there are no wings; the legs are short, and are terminated by a claw adapted for taking hold of hairs or feathers. The eyes are simple, one or two on each side of the head. All the species are small, and live parasitically, on human beings, terrestrial manimalia, and birds. They deposit their eggs on hairs or feathers, to which they attach them by a glutinous substance; and they multiply with astonishing rapidity. The young cast their skin several times before they reach their maturity, which in the best known species is said to be about 18 days after they are hatched, but, from the first, they are very similar to their parents. Animals of different kinds are infested by different species of L. peculiur to them; those which are found on birds differing considerably from those of man and mammals. same species is rarely found on different species of animals, unless very nearly allied; but some animals have more than one of these parasites. Three infest the human race: one confined to the head, the Common L. (P. capitis); another, the Body L. (P. vestimenti s. corporis), very similar to it, but of a larger size; a third, the Crab L. (Phthirius pubis), sometimes found in the



Louse:

A, louse, magnified; B, louse, natural size; C, one of the legs, magnified; D, eggs, magnified; E, eggs, natural size.

eyebrows, but more frequently in the pubic region, and chiefly in persons of licentious habits; having the body broader, and other characters considerably different from the other two. It has been alleged by those who desire to establish the essential diversity of certain races, that the lice found on different races of men are specifically different; but this has not been proved.

The common or head L. is a very common parasite. The symptoms which the bites of these insects produce are a troublesome itching, and a more or less apparent eruption upon the scalp, the eruption being usually accompanied by small incrustations of blood produced by scratching off the epidermis. On examining the head, in addition to the insects, numerous eggs called nits are found, which are of a pyriform shape, and adhere firmly to the hairs. In six days, the young escape from the egg; at the age of 18 days, these in turn are ready to lay eggs; and the female lays 50 eggs in all; so that the rapid augmentation of these insects is easily accounted for. When only a few lice are present, they may be removed by careful combing, or may be killed by the free application of oil or pomatum to the head; but when they are abundant, the scalp should be sprinkled with the Persian insect-powder (Pyrethrum caucaseum), which, according to Küchenmeister, soon kills them; or rubbed with white precipitate ointment, a common remedy in some countries.

The body L. causes most irritation on those parts of the skin which correspond with the folds and seams of the clothing about the neck and round the waist where the clothes are fastened to the body. The irritation is of the same character as that caused by the preceding species, and the treatment is similar. It is said that the clothes may be purified by burying them in hay for sev-

LOUT-LOUTH.

eral weeks, but the safer plan is to destroy them. The irritation caused by the crab L. is greater than that caused by the other species. It may be destroyed by one or two applications of an essential oil (oil of rosemary, for example), or of white precipitate ointment.

Whether the *Pediculus tabescentium*, or L. occuring in the *Lousy disease*, is or is not a distinct species, is still an open question. The fabulous element enters largely into most of the recorded cases of this disease—as, for example, when Amatus Lusitanus relates that two slaves were incessantly employed in conveying to the sea in baskets the lice which appeared on the body of their master.

LOUT, n. lowt [Dut. loete, a rustic: Milan. lotta, a clod: Prov. lot, heavy, slow: comp. Gael. luchd, the people]: a rough, ungainly, uneducated man; a mean awkward fellow; a bumpkin. Loutish, a. lowt'ish, rude; clownish. Lout'ishly, ad. -li, in a rude, clumsy, awkward manner. Lout'ishness, n. -nes, clownishness; behavior of a bumpkin.

LOUT, v. lowt [AS. hlutan; Icel. lúta, to stoop, to bend: prov. Dan. lutte, to lour, to look threatening]: in OE., to stoop; to pay obeisance; to submit; to bow; to overpower; to discomfit. Lout'ing, imp. Lout'ed, pp. Note.—Skeat seeks to identify this with the preceding entry with the general sense of 'stooping or slouching.'

LOUTH, lowth: maritime county, province of Leinster, Ireland; bounded n. by Armagh and by the Lough of Carlingford, e. by the English Channel, s. by the Boyne and county Meath, w. by Meath and Monaghan; 315 sq. m. or 202,523 acres; 106,070 acres under tillage, 69,320 pasture, 4,880 in plantations, 21,595 waste, bog, towns, etc., and 653 under water. There is extensive tillage of wheat, barley, oats, and green crops. Linen is largely manufactured. The surface is flat, with the exception of the range on the n., which stretches e. and w., and terminates at a height of 1,935 ft. in Carlingford Mountain, overlooking Carlingford Bay. This range consists of a granite nucleus, supporting limestone and clay-slate on its banks. The soil of the level districts is extremely fertile, and eminently suited for wheat-crops. Chief rivers are the Boyne (its boundary on the s.), the Fane, the Glyde, and the Dundalk river. Chief towns are Drogheda, Dundalk, and Ardee. L. anciently formed portion of the territory of Oriel or Or-gial, but was occupied by De Courcy, and formed into a county by King John 1210. It was early apportioned among the military adventurers who accompanied De Courcy and De Lacy; but most of these original settlers have been displaced by later confiscations and apportionments of territory, especially after 1641 and 90. L. abounds with Celtic antiquities, some of which, in the neighborhood of Dundalk, are of great interest. The ecclesiastical antiquities

LOUTH-LOUVAIN.

are very striking. There are two round towers at Monaster-boyce and at Dromiskin. At Mellifont are remains of a beautiful abbey. In Drogheda, several ruined abbeys are still visible, also at Louth and Carlingford. But the most interesting relics of antiquity in L. are the celebrated sculptured crosses of Monaster-boyce, of which the larger is 18 ft. in height. The county is in the Belfast military district, except Drogheda, which is in the Dublin district.—Pop. (1891) 70,852; (1901) 65,820.

LOUTH: large market-town and municipal borough of England, county of Lincoln, 25 m. e.n.e. of the city of Lincoln, on the Ludd. It contains a recently erected mansion house, with a court-house and assembly-room; a beautiful church, St. James, of 16th c., in Later English, with a rich octangular spire 288 ft. high: and an endowed grammar-school. Iron foundries, tanneries, oil-cake mills, and carpet factories are in operation. By means of the canal, extending between L. and Tetney Haven on the estuary of the Humber, there is traffic in

corn and coal. Pop. (1881) 10,690; (1891) 10,040.

LOUVAIN, lô-vān', F. lô-văng' (Ger. Löwen; Flemish, Leuven): city of Belgium, province of Brabant, on the Dyle, 16 m. e.n.e. of Brussels. It is of large area, but great part of the ground is occupied with fields and gardens. Pop. (1901) 42,824; formerly much larger. During the 14th c:, when it was cap. of the duchy of Brabant, it contained 200,000 inhabitants, and 4,000 cloth manufactories. The citizens endeavoring, in the latter part of the 14th c., to assert their independence, with those of other towns of Flanders, were defeated; and many of the weavers from whose industry the city had its wealth and importance, took refuge in England, and L. has never recovered from the blow. There is not now much industry, except that there are very large breweries, some tobacco and lace manufactories, etc.; also L. has a European fame for bell-founding. university, founded 1426 by Duke John of Brabant, was, in the 16th c., regarded as the greatest in Europe, particularly excelling in the dept. of Rom. Cath. theology. It had more than 6,000 students. It was suppressed in consequence of the French Revolution, but restored by the Dutch govt. 1817. The state relinquished it again 1834, but the Rom. Cath. clergy restored it at their own expense 1835. It has a large library and a botanic garden, and is the most numerously attended of Belgian universities.

LOUVER-LOUVOIS.

LOUVER, or Louvre, n. lô'rer [F. l'ouvert, the opening]: ornamental opening often of turret or lantern



Louvre.

shape, on a roof, to allow smoke or foul air to escape from large apartments, such as halls, kitchens, etc. These were particularly required in ancient times, when the fire was placed in the centre of the room, and there was no chimney to carry off the smoke. They are frequently used as ornaments where not required for use, and are then glazed and made into Lanterns (q.v.). The sides of the L. were lined with horizontal overlapped boarding, with a space between the boards, which let out the smoke without admitting the rain. Hence, this sort of boarding, frequently used for the windows of bell towers, etc., acquired the name louver-board-

ing, corrupted into luffer-boards. Louver-window, an open window, having flat cross-bars or boards so inclined as to exclude the rain.

L'OUVERTURE': see Toussaint, François Dominique.

LOUVIERS, $l\hat{o}$ - $v\bar{e}$ - \bar{a}' : a town of France, dep. of Eure, on the navigable river Eure, 60 miles north-west of Paris. It has a cathedral, and celebrated cloth-manufactures, the annual value of which is between three and four million francs. Pop. 11,000.

LOUVOIS, lô-vwâ', FRANÇOIS MICHEL LETELLIER, Marquis DE: war-minister of Louis XIV.: 1641, Jan. 18—1691, July 16; b. Paris. His father was chancellor and secretary of state in the war department, and purchased for him the reversion of this office. L. displayed great administrative ability; but his desire of power was insatiable, and he was willing to involve the whole world in the horrors of war, that he himself might be indispensable to the king. His war policy was ruthless. He caused the Palatinate to be wasted by fire and sword in 1674. For some time, he was, after the king himself, the most powerful man in France. After the death of Colbert, financial affairs came under his control, and the system of extortion and borrowing which he pursued was among the causes of the Revolution. He partially lost favor with the king by counselling him against the marriage with Madame de Maintenon; but afterward instigated the persecution of the Protestants, and involved France In the long war with the German empire, 1688-97. 1689, with the alleged view of securing the confines of the kingdom, he again caused the Palatinate to be des-

LOUVRE-LOVAT.

olated. Madame de Maintenon directed the attention of the king to these atrocities, who thereupon forbade the burning of Treves; but L. declared that, to save trouble to the king's conscience, he had already issued orders for reducing that city to ashes. The king, upon hearing this reply, seized the tongs from the chimney, and would have struck his minister with that ready weapon, if Madame de Maintenon had not stepped between. Such seenes were repeated from time to time, and the health of the vain and ambitious minister gave way. He died suddenly. Louis is said to have rejoiced at his death.—An elaborate history of L.'s administration from original documents in the archives of the Dépôt de la Guerre, by Camille Rousset, appeared in 1861–63 (4 vols., Paris).

LOUVRE, n. lô'vėr [mid. L. lupără—from lupus, a wolf: mid. L. lupārĭŭs, a dog for hunting wolves]: one of the anc. palaces of France in Paris, at first a mere hunting-seat, probably for wolf-hunting, hence the name: see Paris.

LO'VAGE, liv'āj (Ligusticum): genus of plants of nat. ord. Umbelliferæ, allied to Angelica; the fruit elliptical, each earpel with five sharp somewhat winged ribs, and many vittæ in the interstices.—Common L. (L. officinale, or L. Levisticum) is a native of s. Europe, with ternate decompound leaves, and obovate-wedge-shaped leaflets. It is sometimes cultivated in gardens, and notwithstanding its strong and peculiar odor, is used as a salad plant. Its roots and seeds are aromatic, acrid, and stimulant, and are used to cure flatulency and to excite perspiration. A liqueur called Lovage is made from them. A similar, and the only British species, is Scottish L. (L. Scoticum), native of the sea-coasts in northern Britain: it is eaten, both raw and boiled, by the Shetlanders. The flavor is aromatic, but acrid, and nauseous to those unaccustomed to it.

LOVAT, *lō-vât*: river of Russia, rising in the Witebsk marshes, flowing through the govts. of Pskov and Novgorod into Lake Illmen; total length 267 m. It is navigable for barges of 50 tons as far up as Kholm, more than 80 m. from its mouth.

LOVAT, 'ŭv'at. Simon Fraser, Lord: about 1676-1747, Apr. 9; second son of Thomas Fraser, fourth son of Hugh, ninth Lord Lovat. His mother was Sybilla, daughter of the chief of the Macleods. The Frasers, a family of Norman origin, had obtained Highland territories, in the county of Inverness, in the 13th c., and had established themselves as the patriarchal chiefs of the Celtic inhabitants within these territories, rather than as landlords, in the feudal acceptation of the term. The first settler—or, more probably, the first who gained renown—was named Simon, hence his descendant were called sons of Simon, or M'Shime. The descendant here under consideration had little hope of succeeding to the

estate and honors, until the prospect opened to him under a settlement by his cousin, Lord Lovat. The succession was not indisputable, but until a much later period in the Highlands, influence with the clan often superseded direct hereditary descent. Simon at an early period gained their hearts. His first adventure was an effort to get forcible possession of the young sister of the late lord, who had more legal claims, as heiress to the Fraser estates. Baffled in this, he, for a reason which has defied all attempts to discover, seized on the widow of the late lord, a lady of the Athole family, and compelled her to marry him. As this was not only a crime, but an offense to a powerful family, Simon could protect himself from punishment by force only, and thus he kept up a petty rebellion for some years. On the accession of Queen Anne, when his opponents became all-powerful, he fled to the continent. He was at the bottom of the affair called the Queensberry Plot 1703, in which he professed to reveal the policy of the exiled court, and a plan for a rising in their favor among the Highlanders. On the discovery that he had hoaxed Queensberry and other statesmen, and was playing a deep game of his own, he escaped with difficulty to France. Of his manner of life there during 12 years, there are only mysterious rumors, by one of which he was reputed to have taken orders as a Roman priest. He had been outlawed for his outrages, and another enjoyed his estates by the letter of the law; but he was still the darling of his clan, and on the breaking out of the insurrection of 1715, they sent a sort of ambassador to bring him over. What followed is remarkable, as showing that the Highlanders were led by the politics of their chiefs, not by their own prepossessions. The holder of the estates having joined the insurrection, Simon found it his interest to take the government side. His clan at once left the insurgents; and for this good service he was invested with the estates, not only by the votes of his clan, but by the law. His life, for the ensuing 30 years, was active with local intrigues calculated to strengthen his influence. In the insurrection of 1745, he tried to play a double game—sending forth his clan, under command of his son, to fight for the Pretender, and deeply plotting for that cause, while he professed to be a loyal subject. He was a special object of the vengeance of the government, and after a flight which involved many hardships, was at last arrested on an island off the w. coast, and conveyed in a litter to London, being helpless from disease. After a trial of five days he was sentenced to death, and was beheaded. L. was remarkable as a type of that class of Highland chiefs who professed to be led by policy as sovereigns, rather than by the laws of the country or its social system; and who were ashamed of no turpitude, fraud, or violence, if it tended to the aggrandizement of themselves and their clans.

LOVE, n. luv [Ger. lieben, to love: Gael. lub, to yield, to eonsent: L. *libet*, it pleases; *libīdŏ*, pleasure, desire: Pol. *lubic*, to have an inclination for: Russ. *liôbit*, to love; lobzat', to kiss]: an affection of the mind excited by qualities in an object which are capable of communicating pleasure; the passion of the sexes; courtship; the object beloved; good-will; benevolence; strong liking or inelination; fondness; tenderness or regard; dutiful reverence to God: V. to delight or take pleasure in an object; to regard with strong and tender affection, as that of one sex for the other; to regard with parental tenderness; to regard with good-will or benevolence; to be pleased with; to like. Lov'ing, imp.: Adj. fond; affectionate; expressing love or kindness. Loved, pp. luvd: Add. possessing the affection of any one. Lover, n. luv'er, one who loves. Lovable, a. luv'a-bl, worthy of love; amiable; that may be loved. Love'less, a. -les, without love; without tenderness; destitute of kindness. Lovely, a. luv'li, possessing qualities that excite love, admiration, or esteem; amiable; beautiful; delightful. Love'lily, ad. -li-li, in a loving manner. Love'liness, n. -li-nes, possession of qualities that exeite love. Lov'INGLY, ad. -li, affectionately; with kind-Lov'ingness, n. -nes, kindness; affection. Lov-ING-KINDNESS, tender regard; mercy; favor. Love-APPLE, a vegetable, also called tomato (see Tomato). LOVE-CHARM, a supposed charm by which love may be excited. LOVE-FAVOR, something given that may be worn in token of love. Love-feast, among Wesleyan Methodists, a religious repast held quarterly, modelled on the Agapæ which the primitive Christians held usually in connection with some solemn festival, e.g., before the communion. Wesley's rule establishing the love-feast exists nominally in the Meth. Epise. Church in the United States, but is not enforced with strictness. Strictly, none but members of the church should be present. The feast is held at the quarterly conference: after scripturereading with singing and prayer, bread and water are distributed to all, and a report concerning the church and its members is made by the pastor. Some Bapt. mission-churches in Europe hold love-feasts, a eombination of church-sociable and devotional meeting. For Moravian love-feast, and in general, see AGAPÆ. LOVEкмот, a complicated figure by which an interchange of affection is supposed to be figured. LOVE-LETTER, a letter written in courtship. Love-lock, a particular sort of eurl worn by men of fashion in the reigns of Elizabeth and James I., on the temples. Love-Lorn [love, and OE. lorn, lost]: forsaken by one's love. Love-MAKING, courtship. Love-sick, languishing from love. Love-spell, a love-charm. Love-token, a present in token of love. Love-lies-bleeding, a flower, a kind of amaranth; the Amaran'thus caudātus, ord. Amaranthacea. Love-potion, formerly, a compounded draught administered to excite feelings of love. IN LOVE, filled

LOVE-BIRD-LOVEJOY.

with affection or desire, as for the possession of an object.—Syn. of 'love, u.': affection; coneord; delight; pleasure; kindness; friendship; tenderness; devotion; charity;—of 'lovely': pleasing; handsome; pretty; fine; charming; delectable; enchanting.

LOVE-BIRD (Psittacula): genus of birds of the parrot family (Psittacidæ), a group of beautiful and very small species, natives of the warm parts of America, of Africa, and Australia. They receive their name from the affection which they manifest toward one another, whether in a wild state or in a cage. An Australian species, about the size of a sparrow, is now common as a cage-bird everywhere. They are lively birds, and fond of being caressed. They feed on the seeds, etc., on which canaries are fed, and are very fond of chickweed and other plants, with seeds ripe or nearly so.—Anatomically, this genus is remarkable in the parrot tribe for having no furcula (merrythought bone).

LOVEJOY, lŭv'joy, Elijah Parish: reformer and martyr: 1802-37; b. Albion, Me. He graduated at Waterville College 1826; was teacher at St. Louis, Mo.; then political editor; studied theology at Princeton Seminary, and-was ordained Presb. minister 1833. then became editor in St. Louis of a religious paper, The Observer. L., though not claiming to be of the com-. pany known as Abolitionists, was eonseigntiously opposed to slavery and was zealous for the liberty of the press. When, 1836, a negro prisoner was taken from the jail in St. Louis by a mob and was chained to a tree and burned to death—and when the judge charged the grand jury ealled to indict the perpetrators of the crime, to the effect that the participators in such a murder are absolved from guilt if the mob were impelled by a 'mysterious, metaphysical, and almost electric frenzy'—L.'s strictures on the charge led to the destruction of the Observer office by a mob. He removed to Alton, Ill.; but his press was demolished by lawless men soon as it was landed there. Some citizens reimbursed him, and he procured another press; but 1837, a mob destroyed his press and types. Another press which was brought was broken into fragments before it could be set up, and was thrown into the Mississippi. The law-abiding citizens of Ill. rallied, and in a convention at Upper Alton demanded in the name of human rights and of the liberty of the press, that the press of the Observer should be re-established at Alton. At a public meeting ealled to consider whether the publication of the paper should be permitted there, L. made a noble and powerful address, declaring that, obeying his conscience and in the fear of God, he was not able to evade his plain duty by abandoning the contest for human rights under the laws that guarantee liberty of speech in this republie. This address seemed for a time to produce some effect; but when another press arrived the mob gathered with threats, and it was not taken to the office, but stored in

LOVEJOY-LOVER.

a warehouse, the mayor superintending. Here L., with 12 or 15 friends, armed, undertook to watch it through the night. About midnight, a mob attacked the warehouse, broke in the windows, fired several shots, and then prepared to burn the building. The mayor appeared as the mob's messenger, to say that if L. and his friends would surrender the press they should be allowed to go uninjured. This was rejected, and the building was fired, with the order given outside, 'Shoot every abolitionist as he leaves.' Then there was further firing of guns, in which—this time—some of the defenders took part. L. stepping outside—the roof being on fire—to take part in defending the building, was shot from behind a pile of lumber, and died almost instantly. —The tragic event caused much excitement in the country, but strange as it now seems, there were multitudes, and some high in public station, who denounced L. as having met a fitting end. The grave of the martyr to the freedom of the press was unmarked for many years. A monument now commemorates this sacrifice to liberty.

LOVE'JOY, OWEN: 1811-64; b. Albion, Me.; bro. of Elijah Parish L. (q.v.). He graduated at Bowdoin College. A witness to his brother's murder, he knelt at his grave and vowed undying hostility to slavery. A year after the tragedy, he became pastor of the Congl. Church, Princeton, Ill.; and 1856 he was elected to congress. In public and private life he made good his vow; against fierce threats, and repeatedly in peril of assassination, aiding, and protesting his purpose to aid, in the escape of every slave that came to him for help.

LOVELL, luv'el, James: 1737-1814; b. Boston; son of John L. (1710-88, master of the Boston Latin School). L., after graduating at Harvard 1756, was usher in the school under his father. After the battle of Bunker Hill, Gen. Gage, British commander, imprisoned him for a time. He was in the continental congress 1776-82; collector of the port of Boston 1788-89; naval officer from 1790. He died in Windham, Me.

LOV'ELL, James' 1758-1850: Revolutionary officer. He graduated at Harvard 1776; became adjutant in a Mass. regiment, and afterward in Lee's famous Legion in the campaign in the southern states. He was conspicuous in many battles, and died at St. Matthews, S. Carolina.

LOVER, lux'er, Samuel: artist, novelist, and songwriter: 1797-1868, July 6; b. Dublin; son of a stockbroker. At an early age, he showed great desire to become an artist, and with genius and perseverance, succeeded so far that, 1828, he was elected a member of the Royal Hibernian Soc. of Arts. In 1833, he exhibited at the Royal Acad. a portrait of Paganini, which brought him some reputation as a portrait-painter. As a miniature-painter, in Dublin, he took likenesses of the principal aristociacy and leaders of Irish society. In 1832,

LOVEWELL-LOW.

he published a collection of short pieces, Legends and Stories of Ireland, with six Etchings by the Author, which was favorably received, and followed by a second series In 1837, L. settled in London, and contributed largely to periodical literature. He also wrote Rory O'More, a romance of Irish life, which immediately became popular, and was produced on the stage. His next publication was Handy Andy, completed, with illustrations by the author, 1842. In 1844, L. published Treasure Trove, with Illustrations by the Author. As a writer of songs, L. holds a well-earned reputation; his Rory O'More, Molly Bawn, Low-backed Car, Angel's Whisper, and others, have long been established favorites with the public. L. published Metrical Tales, and other Poems, in 1860; and edited a compilation of Lyrics of Ireland. In 1844, L. projected an entertainment called 'Irish Evenings,' which was very popular in London, the provinces, and the United States. L. was for some years in the receipt of a pension from the crown. his life by Bayle Bernard (1874).

LOVE'WELL, John: b. N. H., toward the end of the 17th c.; d. 1725; son of John L., who was ensign in Cromwell's army and lived to an extraordinary age. In the last year of L.'s life, he was capt. of volunteers in several successful expeditions against the Indians, in one of which—against the Indian chief Paugus—he was killed. The scene of the battle was near Lovewell's pond, which was named in memory of him. See Expedition of Captain Lovewell, by F. Kidder (1865).

LOVICZ, *lō'vich*: ancient town of Poland, govt. of Warsaw; on the Bzura, a tributary of the Vistula, 45 m. w.s.w. of Warsaw. It is mentioned in history as early as 1136. About 1355, it became a favorite residence of the primates of Poland. It has been prominent in the political revolutions of the country. Pop. (1880) 8,723. Six fairs are held here annually.

LOW, a. lō [Icel. lagr, short, low: Sw. log; Dut. laag, low]: not high or elevated; placed below in relation to another thing; not rising to the usual level, height, or standard; shallow; descending far downward; below the usual rate, price, or value; soft; not loud or noisy; mean or humble in rank; reduced; dejected or depressed; humble; vulgar; unrefined; mean; dishonorable; in OE., inpotent; subdued: Ad. not on high; near the ground; under the usual price or value; in a time approaching our own, as, such were the usages of war as low down as the 19th century; in a mean or degraded state; softly; down in position or circumstances. Low'er, a. -er, compar. of low; less high or elevated. Low'er, a. -est, superl. of low; least high or elevated. Low'er, a. -li, humble; free from pride; meek; mild; not high or exalted: Ad. in a low condition; humbly; meekly. Low'elevated: Ad. in a low condition; humbly; meekly. Low'elevated: Ad. in a low condition; humbly; meekly. Low'elevated: New in the low'elevated in the low'elevated in a low condition; humbly; meekly. Low'elevated: Ad. in a low condition; humbly; meekly.

or character; depression, as of mind, spirits, strength, or intensity. Low-born, borr in humble life. Low Church, applied to the party in the Church of England which does not assert Episcopacy to be the only form of church government, or attach the same value or importance to the sacraments as the High Church partyopposed to High Church. Low Latitudes, see under LATITUDE. Low LIFE, life among the poorer classes of a country. Low-MINDED, mean in mind or disposition. Low water, lowest point of the tide at ebb. Low-WATER MARK, the lowest point to which the tide recedes. Low-pressure, applied to the condensing steamengine. Low-spirited, dejected; depressed; wanting in liveliness. Low Sunday, the Sunday next after Easter. Low-wines, the first run of the still; the first liquor produced by distilling molasses or fermented liquors. Lower-case, among printers, the case which contains the small letters of the alphabet. Lower Em-PIRE, the Roman or Western Empire, as distinguished from the Eastern or Byzantine, which names existed from the date of the removal of the seat of empire to Constantinople A.D. 325, to its destruction by the Turks Low-Level gravels, in geol., a term applied to the sands and gravels that occur in the lower terraces of valleys, in contradistinction to the high-level gravels. Note.—Low Sunday is said by some to have been so named, (1) because there is a return to the ordinary church service which has less ritual in it; (2) because anciently parts of the solemnities of Easter-day were retained, being thus a feast-day but of a lower degree; (3) that it is a mere corruption of L. Laudes, the first word of the Sequence for the day, beginning with the words, Laudes Salvatori voce modulemur supplici, 'Praises to the Savior let us sing with suppliant voice.' The last is the most probable.—Syn. of 'low, a.': depressed; deep; dejected; abject; submissive; reverent; dissolute; base; grave; modern; grovelling; feeble; weak; moderate; impoverished; reasonable; plain; simple.

LOW, v. $l\bar{o}$ [an imitative word: AS. hlowan; Dutloeien; Ger. luien, to low: O.H.G. $hl\acute{o}jan$, to low]: to bellow as an ox or cow. Low'ing, imp. Adj. uttering sounds as cattle: N. the sounds uttered by cattle. Lowed, pp. $l\bar{o}d$.

LOW, or Lowe, lo: a hill in place-names: see LAW 2.

LOW, or Lowe, n. $l\bar{o}$, in Scot. low [Icel. logi, flame; loga, to flame: Ger. lohe, flame: Dan. laage]: in prov. Eng. and Scot., flame; glow; fire: V. to flame; to flame with rage. Low-Bell, n. $l\bar{o}'b\bar{e}l$ [low, and bell]: night-fowling in which a bell and lights are used: V. to scare as with a low-bell.

LOW, lō, Seth, Ll.D.: b. 1850, Jan. 18, Brooklyn; son of Abiel A. L. (b. Salem, Mass., 1811). He studied at Columbia College, New York, graduating 1870; and after a foreign tour entered the commercial house established

LOW ARCHIPELAGO—LOWE.

by his father in New York. He was admitted to the firm 1875. He led a reform movement in local politics, and 1881 was elected mayor of Brooklyn, and was reelected 1883—giving the city a government free from corruption, sternly unpartisan, and with all departments held to close accountability. He has been interested in movements for social elevation, and has been an active Christian worker in connection with St. Ann's Church. In 1889, he was chosen to succeed Dr. Barnard, deceased, as pres. of Columbia College, and entered auspiciously on that office, in which he has had notable success. Resigned 1891. The library building of Columbia Univ. was his gift at a cost of a million dollars. In 1897 he was defeated for mayor of the enlarged New York, on a non-partisan ticket; in 1901 was elected.

LOW ARCHIPEL'AGO, or PAUMOTA ISLANDS, pow $m\bar{o}'ta$: group of about 80 small coral islands, eastward of the Society Islands, about long. 136°.

LOW COUNTRIES: see NETHERLANDS.

LOWE, lō, Sir Hudson: 1769, July 28—1843, Jan. 10; b. Galway, Ireland. He entered the army, and served in Corsica, at Lisbon, and Minorca. He commanded in the island of Capri, which he surrendered to the French 1808, Oct. 16; later, he served in Germany under Blücher. 1815, Aug. 23, L. was appointed gov. of St. Helena, with the rank of lieut.gen., having in charge the safe-keeping of Napoleon Bonaparte. arrived in St. Helena 1816, Apr. 14, Napoleon having been landed there Oct. 17 of the previous year. The situation involved a heavy amount of private care, and public responsibility, and inevitable public obloquy. Relaxation of vigilance for a single hour might have resulted in another European war; while the due exercise of vigilance entailed on him every kind of annoyance which the peevish and irritable captive had it in his power to give. On the death of Bonaparte, L. returned to England, where his eminent services met ungrateful return. In 1825, he was appointed military commander in Ceylon. He died at London in poverty.

LOWE, Right Honorable ROBERT (Viscount SHER-BROOKE), 1811, Dec.—1891, Sep. 12: Eng. statesman: b. Bingham, Notts, of which parish his father was rector. He was educated at Winchester, and University College, Oxford; was called to the bar 1836, and, emigrating to Australia 1842, soon gained repute at the Sydney bar, and as a political leader. He returned to England 1850: was elected to parliament 1852 for Kidderminster as an independent member with conservative tendencies: took office under Lord Aberdeen 1853, and under Lord Palmerston 1855. In 1859, he was returned for the borough of Calne; and he represented the London Univ. from 1868 till he went to the upper house. In 1859, he became virtual minister for education in Lord Palmerston's

LOWELL.

second administration, resigning 1864. He largely contributed to insure the rejection of the Whig Reform Bill 1866. He was, with other 'Adullamites,' offered a post in the Derby govt., but declined to leave the liberal party, though protesting himself an outcast from it. In 1867, L. was still an opponent of all reduction of the suffrage. In 1868, L,'s difference with the liberal party was forgotten, in his strenuous aid to the liberal leaders in disestablishment of the Irish Church. Accordingly, he obtained in Gladstone's liberal ministry the office of chancellor of the exchequer; exchanging it 1873 for that of home secretary. As chancellor of the exchequer, his proposal of a tax on matches was very unpopular; but the annual surpluses were large almost beyond precedent. L. exerted himself to keep down the public expenditure; and his curt treatment of all claimants of public money brought odium upon him. In acuteness, and cogency of argument, in originality and daring, L. was scarcely equalled among public speakers of his day. As an educational reformer, he was an opponent of the pre-eminence allowed to the study of the classics. was raised to the peerage 1880.

LOWELL, lō'el: city in Mass., Middlesex co., on the Merrimac river, 25 m. n.w. of Boston; terminus of the Boston and Lowell, the Nashua and Lowell, the Stony Brook Lowell and Andover, and the Framingham and Lowell It was laid out 1821; incorporated as a borough 1826, and its name changed from East Chelmsford to L. in honor of Francis Cabot Lowell (q.v.), who before his death, 1817, supplied the original plans from which it was developed. It was chartered as a city 1836. L. is one of the chief manufacturing cities in the United States, and is sometimes called the 'Manchester of America;' its principal manufactures are cotton and woolen goods, prints, carpets, etc. Its water-power is mainly from the Pawtucket falls, 33 ft. high, on the Merrimac, owned by a corporation chartered 1792, which also purchased the canal around them 1821, and built a new canal 1847. The stock of this company is held by the manufacturing companies, who lease the power to the amount of about 10,000 horse-power. Steam also is used to the amount of nearly 20,000 horse-power; besides the water-power of Concord river, controlled by another company, and leased to the extent of about 500 horse-power. The first cotton mill was built 1823. In 1900 there were 981 manufacturing establishments, employing \$46,578,193 capital and 31,377 persons; paying \$11,821,-633 for wages and \$21,132,505 for materials; and yielding products valued at \$44,774,525. The largest capital was employed (1) in cotton mills, \$21,354,927; (2) in foundry and machine-shop work, \$6,144,897; (3) in woolen mills, \$3,392,280; (4) in hosiery and knit goods, \$3,135,987; and (5) in leather, \$1,437.948. The largest corporations are the Merrimac, employing 3,300 opera-

tives; the Lawrence 2,130, the Booth 1,875, the Massachusetts 1,717, the Lowell 1,700, Tremont and Suffolk 1,500, and the Hamilton 1,387: the largest eapital employed is about \$2,500,000; the smallest, \$1,200,000. these mills are produced prints, drillings, eotton sheetings and shirtings, ingrain, Brussels, and Wilton carpets as beautiful and durable as the best European make, serges, flannels, eassimeres, and beavers, cotton and merino hosiery, etc. With the larger manufactorics are connected many others for making machinery, boilers, edge tools, files, screws, bobbins, pumps, hydraulic presses, chemicals, leather, elastic, and wire goods, paper, eartridges, carriages, hair felt, doors, sashes, blinds, etc. The Lowell Machine Shop, capital more than \$600,000, employs 1,400 men in making machinery, and uses annually about 9,800 tons of iron and Other iron works are the American Bolt Co., the Swaine Turbine Co., Kitson's cotton machinery manufactory, etc. J. C. Aver and Co.'s patent medicine factory here prints its 10,000,000 almanaes every year. The manufacturers of L. have always shown commendable interest in the moral and physical welfare of their employes. They provide model boarding and lodging houses at reasonable prices, also own a large number of comfortable dwelling houses which they rent at very low rates to reliable operatives. A hospital is provided, in which sick or injured operatives are cared for free of expense if unable to pay. The work-people have access to free reading-rooms and libraries; and there are six or seven night-schools, and several technical schools, attended chiefly by employes' children. The result is that the L. operatives are more contented, and more intelligent and self-respecting than in most other places. They have published for many years a periodical of considerable literary merit, *The Lowell Offering*, probably the only publication of the kind in the world, some of the women contributors to which have taken good rank in American literature. Two young men of L., Luther C. Ladd and A. O. Whitney, were the first to shed their blood for the Union in the civil war, being killed by the mob while marching to the defense of Washington through Baltimore with their regt., 6th Mass. vols., 1861, Apr. 19. A granite monument to their memory stands in one of the public squares, of which there are several in L. The city is regularly laid out, well paved, drained, and lighted; and is in the midst of a charming landscape, the elegant residences of most of the wealthiest citizens being elustered in the village of Belvidere, the e. suburb of the city. In the s. part is a beautiful cemetery. Local travel is expedited by a horse railway; pure water in abundance is supplied by the city waterworks, eonstructed 1873, at a cost of about \$1,500,000; there is a well organized and equipped fire department, and a good police force. The city, divided into wards, is governed by a mayor, common council, and board of Idermen. It contains the co. court-house, prison, and almshouse; a city hall, and several other public halls; 4 public libraries, 2 reading-rooms, 12 or more daily, weekly, and semi-weekly newspapers; nearly 100 public schools, besides night schools, technical schools, a reform school, and several parochial schools. It has no less than 35 churches, belonging to 12 different denominations, of whom the Rom. Cath., Congl., Meth., and Bapt. are the strongest. Two of the Rom. Cath. churches -St. Patrick's and the Immaculate Conception-are among the handsomest in the state. There are 3 hospitals, a free dispensary, 2 orphan asylums, one in charge of the Catholic sisters of charity, an old ladies' home, and a home for young women and children. The 6 national banks have (1902) total capital of about \$1,-600,000; the 6 savings banks have deposits to the amount of more than \$12,000,000. Net public debt of the city (1903) including more than \$1,500,000 contracted for introduction of water, \$2,916,336; assessed valuation of property in the city \$71,894,907. Pop. (1870) 40,928; (1880) 59,475; (1890) 77,696; (1900) 94,969.

LOWELL, lō'el, Charles Russell: soldier: 1835, Jan. 2—1864, Oct. 20; b. Boston: son of Charles L., D.D. He graduated at Harvard 1854; spent several years in European travel and study; engaged in business on his return to the United States; and entered the Union army as capt. 6th U. S. cav. 1861, May 14. He served through the Peninsular campaign with his company, and in n. Va. and Md. on the staff of Gen. McClellan; organized the 2d Mass. cav., and was appointed its col. 1863, Apr. 15; commanded a brigade of cav. in Va.; served with Gen. Sheridan in the Shenandoah valley; and received fatal wounds in the battle of Cedar Creek. He was promoted brig.gen. of vols. 1864, Oct. 19, the day of the battle, and died from his wounds the following day.

LOW'ELL, Francis Cabot: manufacturer: 1755, Apr. 7—1817, Aug. 10; b. Newburyport, Mass.; son of John L. (1743–1802). He graduated at Harvard College 1793, 1810–13 studied the manufacture of cotton goods in England, and on his return established the first cotton factory in the United States at Waltham, Mass., in conjunction with Patrick T. Jackson, his brother-in-law. In 1816 he secured the adoption of a clause of the tariff act that imposed a duty on imported cotton fabrics. He also founded the city that after his death was named in his honor, Lowell.—His son John L. (1799–1836), was educated at Harvard and Edinburgh Univ.; made high literary attainments; and died at Bombay, India. He left a bequest of \$250,000 to found in Boston the 'Lowell Institute,' which provides an annual course of free lectures by eminent men on important themes.

LOW'ELL, James Russell, Ll.D., D.C.L.: poet: 1819, Feb. 22—1891, Aug. 12; b. Cambridge, Mass.; son of Charles L., D.D. (1782–1861). He graduated at Harvard 1838, and at its law school 1840; at once began practicing law in Boston; but within a few months abandoned law and applied himself to literature. In 1843 he began contributing poems to the Anti-Slavery Standard, of which he became corresponding editor 1848, and subsequently contributed to the Boston Courier, in which the first series of his celebrated Biglow Papers appeared 1846-48. While strongly aiding the anti-slavery movement, he undertook the editorship in conjunction with Robert Carter of a purely literary publication, The Pioneer, a Literary and Critical Magazine, 1843; but though some of the most eminent writers of the day contributed to the publication, it lasted only three months. In 1851, he made a prolonged tour of England, France, Switzerland, and Italy; 1854-55 delivered a course of lectures on the British poets before the Lowell Institute, Boston; 1855, Jan., succeeded Henry Wadsworth Longfellow as prof. of modern languages and belles-lettres in Harvard College: 1855-57 studied abroad to qualify himself for that office; and 1857 entered on the discharge of his new duty. In the latter year he also became editor of the newly-founded Atlantic Monthly, and held the office till 1863, when he became joint editor with Prof. Charles Eliot Norton of the North American Review, with which he was connected till 1872. To these publications he contributed some of his choicest essays and miscellaneous writings, and to the first the second series of his Biglow Papers. He made a second tour of Europe 1872-74, during which he received the degrees LL.D. from the Univ. of Cambridge. and D.C.L. from the Univ. of Oxford, England. In 1876 he was a republican presidential elector; 1877 was appointed by Pres. Hayes U.S. minister to Spain; 1880 was transferred to the court of St. James; and 1885 delivered an address at the unveiling of the bust of Coleridge in Westminster Abbey, and terminated his official residence in Great Britain. He resumed his lectures at Harvard, gave a course on the English dramatists before the Lowell Institute, and made a brief visit to England 1887. At the centennial of the inauguration of Pres. Washington in New York, 1889, Apr., he responded to the toast Our Literature.

L.'s prose is affluent in thought and faultless in literary form. His lighter verse is rich in humor and fertile in apt illustrations. His more serious poetry has been criticised as giving an impression of lack of spontaneousness through elaboration of thought. His publications include Class Poem (1838); A Year's Life (1841); Poems (1844); The Vision of Sir Launfal (1845,48); Conversations of Some of the Old Poets (1845); Poems (1848); The Biglow Papers (1848); A Fable for Critics (1848); Poetical Works, 2 vols. (1858); Mason and Slidell, a Yankee Idyl (1862); Fireside Travels (1864); Ode at the

Commemoration of the Living and Dead Soldiers of Harvard University, 1865, July 21; The Biglow Papers, 2d series (1867); Under the Willows, and Other Poems (1869); Among my Books (1870); Three Memorial Poems (1876); Among my Books, 2d series (1876); and Democraey, and Other Addresses (1887).—His father, Charles L., D.D. (1782, Aug. 15—1861, Jan. 20, b. Boston) was a son of Judge John L. (1743-1802), graduated at Harvard 1800, studied law and theol., and was pastor of the West Church (Congl.) in Boston from 1806 till his death.— L.'s sister, MARY TRAILL SPENCE (LOWELL) PUTNAM, author and linguist (b. Boston, 1810, Dec. 3), married Samuel R. Putnam, Boston merchant, 1832, and besides literary and review articles has published History of the Constitution of Hungary and its Relations with Austria (1850); Records of an Obseure Man (1861); The Tragedy of Errors and The Tragedy of Success (1862); Memoir of William Lowell Putnam (1862); Fifteen Days (1866); and Memoir of Charles Lowell (1885).

LOW'ELL, John, Ll.D.: 1743, June 17—1802, May 6; b. Newburyport, Mass.: lawyer. He graduated at Harvard 1760, was admitted to the bar 1762, served in the provincial assembly 1775, settled in Boston 1777, and was a member of the legislature 1778, and delegate to the constitutional convention 1780. In the latter body he was a member of the committee that drafted the constitution, and was author of the clause by which slavery was abolished in Mass. In 1782–82 he was a member of the continental congress; 1783–89 judge of the court of appeals; 1789–1801, judge of the U. S. district court; and 1801–2 judge of the U. S. circuit court. He received the degree LL.D. from Harvard 1792.

LOW'ELL, JOSEPHINE (SHAW): philanthropist: b. W. Roxbury, Mass., 1843, Dec. 16; daughter of Francis George Shaw and widow of Gen. Charles Russell L. received a liberal education in the United States and Europe, spent 1851-55 in foreign travel, married Gen. L. 1863, and since his death has been engaged in hilanthropic work in N. Y. state and city. In 1873 sne was appointed by the gov. a member of the N. Y. state board of charities and correction, being the first, and for a long time the only woman to serve on that board, and still (1890) holds that office. In 1881 she was conspicuous in forming the Charity Organization Soc. of New York, and has since been a member of its council and chairman of the committee on district work, which has direct charge of work among the poor. Her publications comprise numerous reports and special pamphlets, and Public Relief and Private Charity (New York 1884).

LOW'ELL, ROBERT TRAILL SPENCE, D.D.: educator: b. Boston, 1816, Oct. 8; brother of James Russell L. He graduated at Harvard 1833, took a full course in its medical school, and engaged in mercantile business till 1839, when he began studying theology. He accom-

LOWENTHAL-LOWER.

panied Bp. Spencer (Prot. Episc.) to Bermuda, where he took orders and became domestic chaplain to the bp. and inspector of colonial schools 1842. In 1843 he went to Newfoundland, and while in charge of Bay Roberts performed valuable medical service in the famine 1846. Subsequently he held rectorships in Newark, N. J., and Duanesburg, N. Y., was head master of St. Mark's school at Southboro', Mass., 1869–73, and was prof. of Latin language and literature in Union College 1873–80. He had published a number of novels, poems, and magazine and review articles: his novel, The New Priest of Concepcion Bay, was much admired. He died Sept. 12, '91.

LOWENTHAL, lō'vėn-tâl, ISIDOR: Christian missionary: 1827–1864, Apr. 24; b. Posen, Prussian Poland; of Jewish parentage. He early acquired remarkable proficiency in Hebrew and philology, became a mercantile clerk, and 1846 fled to the United States through fear of imprisonment for having published a liberal poem. While seeking a living as a street-pedler in New York, he attracted the attention of the Rev. S. M. Gayley, of Wilmington, Del., through whose efforts he was appointed teacher of French and German in Lafayette College. He also entered the senior class as a student, and was graduated 1848. Subsequently he was appointed teacher of languages in the Mount Holly (N. J.) Collegiate School. In 1851 he was converted to Christianity, 1852 entered Princeton Theol. Seminary, 1855 was appointed tutor in the College of N. J., and 1856 entered the service of the Presb. Board of Foreign Missions as missionary to the Afghans in India. He soon learned the Persian, Cashmiri, Hindostanee, Arabic, and Afghan languages; translated the New Test. into the latter; and was completing an Afghan dictionary when his greatly useful career was cut short by an accidental death at Peshawur.

LO'WENTHAL, John Jacob: 1810, July—1876, July 20; b. Buda-Pesth, Hungary: chess expert. He became widely known as a chess player 1841, came to the United States 1849, went to London to engage in a chess tournament 1851, and resided there till his death. For several years he was chess editor of a number of daily and weekly newspapers, edited the Chess-Players' Magazine 1865-67, and Transactions of the British Chess Association 1867-69, and held the offices of sec. of the St. George and pres. of the St. James chess clubs.

LOWER, v. $l\bar{o}'\dot{e}r$ [from Low 1, which see]: to bring low; to cause to descend; to let down; to bring down; to lessen; to humble or degrade; to enfeeble; to sink. Low'ering, imp.: Adj. depressing; enfeebling; degrading: N. the act of bringing down or lessening. Lowered, pp. $l\bar{o}'\dot{e}rd$.

LOWER, or Lour, v. lowr [Dut, loeren, to frown, to cast a cunning or wistful look: Low Ger. luren, to look displeased; Ger. lauern, to spy]: to begin to be overcast

LOWERMOST-LOWRIE.

with clouds; to appear dark, gloomy, or threatening—applied to the weather, or to the countenance; to look sour or grim; to look sullen or angry. Lower'ing, imp.: Add. appearing dark or threatening; gloomy. Lowered, pp. lowrd. Lower'ingly, ad.-li. Lowery, a. lowr'i, cloudy; gloomy. Note.—Lower is probably connected with Low 4. Skeat, however, seeks to connect Lower with Leer in the general sense 'to look; to glance.'

LOWERMOST, a. lō'ér-mōst [lower, and most]: superl. deg. of low; another form of lowest: see Low 1.

LOWESTOFT, low'es-toft: seaport and bathing-place, in the county of Suffolk; most easterly town in England; on a height sloping gradually to the sea, 25 m. s.e. of Norwich. There are two light-houses, one on the cliff, and a lower one s. of the town. There is profitable fishery of soles, mackerel, and herrings. The harbor is spacious. Ropes and twine are manufactured, Pop. (1871) 15,246; (1881) 19,597; (1891) 23,347.

LO'WICZ: see Lovicz.

LOWLANDS, n. plu. lō'lăndz [low 1, and land]: the flat or level districts of a hilly or mountainous country, as distinguished from the highlands. Low'land, a. pertaining to the level districts. Low'lander, n. -ėr, an inhabitant of the low or level districts—a term used in Scotland.

LOWNDES, lowndz, RAWLINS: 1722–1800, Aug. 24; b. British W. Indies: statesman. He removed with his parents to Charleston, S. C., when a child, was educated for the law, became a crown judge 1766, and was active in the early movements for colonial independence. In 1775 he was elected a member of the council of safety, 1776 was member of the committee that drafted a constitution for the province, 1777 was a member of the legislative council, and 1778 became pres. of the province. He was captured by the British at the fall of Charleston. After the war he was a member of the S. C. legislature, and conspicuous for opposition to the federal constitution and advocacy of the African slave-trade.

LOWRIE, low'ri, Walter: 1784-1868; b. Edinburgh. He was brought by his parents to Penn. 1791, settling finally in Butler co. He studied for the Presb. ministry, but was led to a different pursuit. In 1811 he was chosen to the Penn. senate, and after seven years' service was chosen to the U. S. senate; and 1824-36 was sec. of the senate, in which position he became an authority on constitutional law and political history. With Senator Frelinghuysen and others he founded the congressional prayer-meeting. From 1837 till his death he was sec. of the Board of Foreign Missions of the Presb. Church. He was deeply interested in the civilization and evangelization of the Indians.—Three of his

LOWTH-LOXODROMIC.

sons, John, Walter, and Reuben, were missionaries; the last two (in China) early laid down their lives in the work. The oldest, John, returned from India and succeeded his father as sec. of the Board of Missions.

LOWTH, lowth, ROBERT, D.D.: English prelate: 1710, Nov. 27—1787, Nov. 3; son of the Rev. William L., rector of Buriton, Hampshire. He was educated at Winchester School, whence he passed to New College, Oxford, 1730; took his degree M.A. 1737, and was appointed prof. of poetry 1741. In 1750 he became archdeacon of Winchester, and 1753 rector of East Woodhay, Hampshire. In the same year, he published in Latin his excellent Lectures on Hebrew Poetry (De Sacra Poesi Hebræorum Prælectiones Academicæ). It was greatly admired in England, and on the continent, where Michaelis republished it with notes and emendations incorporated in a 2d. ed. by L. himself (new ed., Rosenmüller, Leip. 1815). In 1754, L. received from Oxford Univ. the degree D.D., became Prebendary of Durham and Rector of Sedgefield 1755, a fellow of the Royal Societies of London and Göttingen 1765, Bishop of St. Davids 1766, of Oxford a few months later, of London 1777. Besides his lectures, his two principal works are Life of William of Wykeham (1758) and Isaiah, a New Translation, with a Preliminary Dissertation, and Notes, Critical, Philological, and Explanatory (1778; German ed., by Koppe, Gött. 1779; third ed. in English 1842); a work rather elegant and ornate as a version, but of great value as correcting the numerous blunders of the 'Authorized Version,' and exhibiting how thoroughly literary and artistic is that section of Hebrew poetry which we call prophecy.

LO'XA: see Loja.

LOXA-BARK, n. löks'a-bark [from a town of Ecuador, from the vicinity of which the finest cinchona-bark is said to be exported]: one of the three varieties of pale cinchona-bark. Lexa-bark is derived exclusively from Cinchona condaminea, or from it and C. scrobiculata. The former tree is cultivated in India at high elevations in the Nilgiri Hills, in Ceylon, and in Sikkim.

LOXOCLASE, n. löks'ō-klāz [Gr. loxos, oblique; klasis, cleavage]: a variety of orthoclase, containing a large proportion of soda.

LOXODON, n. löks'ō-dŏn [Gr. loxos, oblique; odous or odonta, a tooth]: one of the sub-genera (genera according to some writers) into which the elephants are divided; the present African elephant is the type.

LOXODROMIC, a. löks'ō-drŏm'ik [Gr. loxos, oblique; dromos, a course]: pertaining to oblique sailing by the rhumb-line. Loxodromic curve of Line, a curve of double eurvature on the surface of a sphere or sphereid, which has the property of cutting all meridians at the same angle. The course of a ship sailing in an oblique

LOXOMMA-LOYAL LEGION.

direction always to one point of the compass, is a loxodromic line, in nautical phrase a rhumb-line. These lines appear as straight lines on Mercator's Projection (see Map). A ship sailing obliquely to the direction of the N. pole (say, two points off) would wind round it in infinite circuits, always approaching nearer, but never reaching it. In this property, as well as in others, the loxodromic line is analogous to the common logarithmic spiral. Lox'odrom'ics, n. plu. -iks, the art of oblique sailing by the rhumb-line.

LOXOMMA, n. lŏks-ŏm'mă [Gr. loxos, oblique; omma, the eye]: in geol., a genus of labyrinthodont reptiles.

LOXONEMA, n. löks'ō-nē'mă [Gr. loxos, oblique; nema, a thread]: a fossil genus of pyramidal-shaped shells—so named in allusion to the thread-like striæ which mark the surface of many species.

LOYAL, a. loy'al [F. loyal, loyal: It. leale—from L. legālis, comformable to law, legal—from lex, F. loi, law]: in former times, conformable to the laws of honor; faithful to a prince or superior; true; devoted. Loy'ally, ad.-lī. Loyalty, n. loy'al-tī, fidelity to a prince or sovereign; the devotion of a wife to her husband; fidelity to a cause or one's word. Loy'alist, n. -ist, a person who adheres to his sovereign, particularly in times of civil commotion.

LOY'AL LE'GION (OF THE UNITED STATES), MILI-TARY ORDER OF THE: instituted Philadelphia, 1865, Apr. 15. The membership consists of companions of three classes: 1. Those who served as commissioned officers of the army or navy, regular or volunteer, in the war against secession, and who were distinguished for gallantry and meritorious service on the field of battle: 2. The eldest sons of such officers who have attained the age of majority: 3. Civilians who during the rebellion distinguished themselves by acts of fealty or loyalty. Companions of the third class are restricted in number to three per cent. of the entire number of first class companions. The perpetuation of the L. L. depends on its feature of heredity of eligibility to membership—the eldest son of a companion of the first class being eligible to the second class, when of age, and to the first class on the death of the person from whom he inherits his eligibility. The badge of the order is a star with blue and gold rays pendant from a ribbon of red, white, and blue. There is no insurance feature, and there are no parades. Nearly all the companions of the L. L. are also comrades of the Grand Army of the Re-It is said that every general officer of the regufar army is a companion of the order, with about 500 fierd, staff, and line officers of the regular army and more than 4,000 officers of the volunteer service. These are divided among 17 state commanderies. The commandery-in-chief is located at Philadelphia, where it meets every two years: a congress of the order meets every

LOYALTY ISLANDS-LOYOLA.

four years. The commanders-in-chief have been Gen. Winfield S. Hancock, Lieut.Gen. Philip H. Sheridan, and Gen. Rutherford B. Hayes. The objects of the L. L. are to cherish the memories of the war for the unity of the republic, to advance the interests of the soldiers and sailors of the United States and to extend all possible relief to their widows and children, to foster military and naval science, and to enforce unqualified allegiance to the national government, and to maintain the national honor, union, and independence.

LOY'ALTY ISLANDS: coral group in the s. Pacific, abt. 60 m. e. of New Caledonia. The largest is Lifn, abt. 50 m. long, 25 m. broad. The elevation is nowhere more than 250 ft. above sea-level. The soil is thin on a rocky basis, but some cotton and cocoa-nut oil are exported. There are missionaries of the London Miss'y Soc. (Congl.), also Rom. Cath. missionaries. The French claim the islands as a dependency of New Caledonia. Pop.—classed as Melanesian—abt. 16,000.

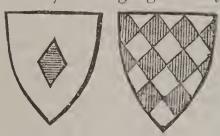
LOYOLA, loy-ō'la, Ignatius de (Inigo Lopez de Re-CALDE), SAINT: founder of the order of Jesuits: 1491-1556, July 31; b. at his ancestral castle of Loyola, near Azpeitia, province of Guipuzcoa, Spain; youngest son of Bertram de L. and Marina Salez de Baldi. After the scant training of that age in letters, he was received as page in the court of Ferdinand; but the restraint and inactivity of court-life were distasteful to his enthusiastic mind, and under the auspices of his relative, Don Antonio Manriquez, Duke of Najura, he embraced the profession of arms. His career as a soldier displayed both the excellency and the irregularities of his ardent temperament, thrown undirected among the duties and temptations of a military life. Of his bravery and chivalrous spirit, many remarkable instances are recorded, one of which was the turning point of his career. In the defense of Pampeluna, he was severely wounded in both legs, one being fractured by a cannon-ball, and the other injured by a splinter, and having been taken prisoner by the French, was by them conveyed to his paternal castle of L., where he lay in long and painful confinement. After a very painful and nearly fatal operation, he recovered; and with his returning strength resumed his habitual levity; for, to remove a deformity from the first setting of his wounded limb, he consented to having it re-broken and re-set. After this operation, his convalescence was even more slow; and the stock of romances by which he was wont to relieve the tedium of confinement, having been exhausted, he was thrown on the only other available reading, the Lives of the Saints. The result, in so ardent a temperament, was a spiritual enthusiasm equally intense in degree with that by which he had been drawn to feats of chivalry. The spiritual glories of St. Francis or St. Dominic now took, in his aspirations, the place of the knights of mediæval romance. With souls like his there is no middle course:

he threw himself, with all the fire of his temperament. upon the new aspirations which these thoughts engendered. Renouncing the pursuit of arms, and all other worldly plans, he resolved to prepare himself for his new course by a pilgrimage to Jerusalem. For immediate preparation, he retired in the garb of a beggar to the cclebrated monastery of Montserrat, where, on the vigil of the Feast of the Annunciation, 1522, he hung up his arms, as a votive offering significative of his renunciation of the works of the flesh, and an emblem of his entire devotion to the spi.itual warfare. From Montserrat he set out bare-footed on his pilgrimage, the first stage of which was a voluntary engagement to serve the poor and sick in the hospital of the neighboring town of Manresa. There his zeal and devotion attracted such notice that he withdrew to a solitary cavern in the vicinity, where he pursued alone his course of self-prescribed austerity, until he was carried back exhausted to the hospital in which he had served. To this physical exhaustion succeeded mental depression, almost despair, from which he arose with spiritual powers renewed by the struggle. From Manresa he went by Barcelona to Rome, whence, after receiving the papal benediction from Adrian VI., he proceeded on foot, as a mendicant, to Venice, and there embarked for Cyprus and the Holy Land. He would gladly have remained at Jerusalem, and devoted himself to the propagation of the gospel among the infidels; but not being encouraged in this by the local authorities, he returned to Venice and Barceiona 1524. Taught by his first failure, he resolved to prepare himself by study for the work of religious teaching, and was not ashamed to return, at the age of 33, to the study of the rudiments of grammar. He followed these elementary studies by a further course, first at the new Univ. of Alcala, afterward at Salamanca, in both of which places he incurred the censure of the authorities by some unauthorized attempts at religious teaching in public; and eventually he was induced to go to Paris for the completion of the studies thus repeatedly interrupted. Here he persistently struggled on without resources other than the charity of the faithful; and here, again, he returned to humble elementary studies. While thus engaged he formed among his companions the pious fraternity which resulted in that great organization which has exercised such influence on the religious. moral, and social condition of the modern world. From the close of his residence in Paris, L.'s history is the history of his order: see JESUITS. From the date of his election as the first general of his society, he resided To him are due in the general spirit, and in many of the details, all its rules and constitutions; from him originated several works of general charity and benevolence, germs of great institutions still maintained in Rome; but the great source of his influence on the spiritual interests of the world is his well-known

LOZENGE-LOZĒRE.

Exercitia Spiritualia (system of rules of penance and mortification). He died at Rome, worn out by long-continued austerities. His name was admitted to the preliminary step of beatification, 1609, and he was solemnly canonized as a saint by Gregory XV., 1623: his festival (duplex) is on July 31. His life has been written in almost every European language. The biographies of Ribadaneira, of Maffei, of Bartoli, and Bounours are best known and most popular among Rom. Catholics.

LOZENGE, n. loz'enj [OF. lozange, and lozenge, a square cake of preserved herbs, a quarry of glass: Sp. losa, a slate, a flag-stone; losar, to pave: Lang. laouza, a slate: F. losange, a lozenge]: figure with four equal sides having two acute and two obtuse angles, commonly called a diamond; a rhomb; common sweetmeat in the shape of a small round (formerly diamond-shaped) or oval cake (see Lozenges). In her., diamond-shaped shield on which the arms of spinsters and widows are borne; a charge generally enumerated among the sub-



ordinaries, in the shape of a rhombus placed with the acute angles at top and bottom; the horizontal diameter must be at least equal to the sides, otherwise, it is not a lozenge, but a Fusil (q.v.) Lozenged, a. loz'ĕnjd, or Lozengeder

SHAPED, a. made in the shape of a lozenge. Lozengy, a. loz'ĕn-jĭ, in her., divided into lozenge-shaped compartments of alternate tinctures.

LOZENGES, lŏz'ĕnj-ĕz: forms of administering remedies intended to act on the pharynx and the laryngeal opening; e.g., in relaxed or inflamed states of the tonsils and uvula, in chronic coughs, etc. According to Dr. Paris (Pharmacologia, 9th ed. p. 555), L. should be composed of several demulcent substances, such as farinaceous matter, sugar, gum, and isinglass, since such a mixture retards as long as possible their solution. The chief difference between L. and drops, is, that in drops the sugar has been rendered fluid by heat.

LOZÈRE, lō-zār': department in s. France, named from Mt. Lozère, one of the summits of the Cevennes (q.v.). It was formed from the province of Languedoc, and comprises the arrondissements of Mende, Florac, and Marvejols; 1,990 sq. m. The dept, is mountainous, the central mass of the Cevennes, here called the Margeride Mts., occupying the e. and s.e. portions. In the mountains, the climate is severe and variable, and little grain is produced; but the slopes on the s. side of the Cevennes, toward the valley of the Rhone, are clothed with the mulberry, the olive, and the vine. Wolves abound in the forests, which are extensive. Cattle, sheep, and mules are reared. The mines yield iron, antimony, lead, copper, silver, and some gold. Cap., Mende.—Pop. of dept. (1881) 143,565; (1891) 135,527; (1901) 128,866.

LUALABA-LÜBECK.

LUALA BA RIVER: see Conco.

LUBBER, n. lub'ber [Dut. loboor, a pig or dog with hanging cars, a raw silly youth: Icel. lubbaz, to loiter about; Gael. leobhar, clumsy: W. llabi, a stripling, a long lubber]: a heavy clumsy fellow; a name given in contempt by sailors to those unacquainted with the duties of a seaman. Lub'berly, a.-li, tall and clumsy; lazy: Add. awkwardly; clumsily. Lubber's-hole, a hole in the futtock-plates at the junction of the upper and lower masts through which a landsman would go in preference to the futtock-shrouds. Lubber's-point, the mark on the inside of the compass-case indicating the direction of the ship's head—so called as a land-lubber only would depend upon it in steering. Land-lubber: see under Land.

LUBBOCK, lŭb'ok, Sir John, Ll.D., Bart., M.P.: banker and man of seience: b. 1834, Apr. 30, London; son of Sir JOHN WILLIAM L., astronomer (1803-65). He was educated at a private school, and at Eton. At the age of 14 he entered his father's banking-house, and 1856 he became a partner in the concern. He served in the international coinage commission, as a member of the public school commission, and advancement of science com-In 1865 and 68 hc contested West Kent unsuccessfully in the liberal interest, but was returned for Maidstone 1870; and losing his seat 1880, he was returned for London University. As a politician he applied himself chiefly to financial and educational subjects, and succeeded in passing more than a dozen important public He was LL.D. of Dublin and Edinburgh, a trustee of the British Museum, a vice-chancellor of the Univ. of London, and acted as president of many important scientific societies. As a man of science, he was known for his researches on the ancient vestiges and remains of man, and on the habits of insects, especially bees and ants. Besides more than 50 memoirs to various societies, he published: Prehistoric Times, as Illustrated by Ancient Remains and the Manners and Customs of Modern Savages (1865); The Origin of Civilization and the Primitive Condition of Man (1870); The Origin and Metamorphoses of Insects (1874); On British Wild-flowers, considered in Relation to Insects (1875); Monograph of the Thysanura and Collembola; Fifty Years of Science, an inaugural address to the British Asso. (1881); Addresses, Political and Educational (1879); Ants, Bees and Wasps (1882). He d. 1879,

LÜBECK, lü'bĕk: city, formerly one of the four free cities of Germany; on the river Trave, about 40 m. n.e. of Hamburg, 14 m. from the Baltic. It is on rising ground, and its appearance with its walls and ramparts still partly standing, its great gates, its proud towers, its Gothic churches, and its antique gabled houses is still almost mediæval. Its principal buildings are St. Mary's Church (Die Marienkirche), one of the most beautiful

4

LÜBECK.

specimens of Gothic architecture in n. Europe, finished 1304, with three naves, the central one 119 ft. in length, and two towers, 382 ft. high; the town-house, containing the Hanseatic archives and a public library (50,000 vols.) built of red and black glazed tiles; the cathedral, built 1170-1341; the monastery church, also a masterpiece of Gothic; the exchange, and the banks. L. is rich in educational establishments of all kinds, religious and secular—the number within the city amounting to 54, while in the suburbs there are no less than 37, in all 91. The provision for the poor is excellent, from large bequests of citizens at different periods, the largest benevolent institution being the Hospital of the Holy Ghost. The industrial activity is considerable. Ship-building and engineering are carried on; there are many breweries and important cigar manufactories; but in the old days when the Hanseatic League (q.v.) was flourishing, the Merchant Company or College could reckon 5,000 members, having in 1859 only 471. The fisheries are important and prosperous. Chief imports are wine, silks, cottons, earthenware, pigments, colonial products, and timber from Sweden and Finland; chief exports, grain, cattle, iron, and wool. The harbor is 16 or 17 m. down the river, at Travemunde, a bathing-place, though the river has of late years been so much deepened, that the largest ships can come up to Lübeck. The income of the city and territory 1879 was \$632,352; public debt, \$5,780,323. In 1870, entered the port 2,302 vessels of 301,910 tons, cleared 2,332 of 307,557 tons. Pop. of town and suburbs (1880) 51,055; (1890) 63,556; (1900) 82,098.

L. has existed since the 11th c., and received important

L. has existed since the 11th c., and received important privileges from the German emperors in the 12th c., which were confirmed by the Danes, into whose power it fell 1201. It was declared a free city of the empire 1226, and thereafter maintained its independence against the Danes, and joined the other commercial towns in the great Hanseatic League (q.v.). With the decline of that League, L. lost its historic importance, but continued a flourishing and independent commercial city, till it was taken and plundered by the French, 1806, Nov. 6. Its trade suffered also grievously from the French Continental System. In 1810 it was incorporated with the French empire. It recovered its independence 1813, and is now included in the German empire. Its trade has revived; and the railway connection with Hamburg, and lines of steamers to ports of the Baltic, have contributed much

to its prosperity.

Constitution.—The constitution, anciently aristocratic, has been democratic since 1669. The govt. is intrusted to a senate of 14 members who, in legislative and in certain administrative functions, need the concurrence of the municipality or council of citizens, a body of 120 members. The supreme court of appeal for the free cities was in L. till 1879, when the imperial courts became supreme; Lübeck Law (Lübisches Recht) remains of acknowledged authority in many questions.

LÜBKE-LÜBRICANTS.

LÜBKE, lüp'keh, Wilhelm: art historian: b. Dortmund, Germany, 1826, Jan. 17. He studied in Bonn and Berlin; became prof. of the history of architecture in the Berlin School of Architecture 1857; 1858-60 travelled in Italy, France, and Belgium; and was appointed prof. of archeology and the history of art in the Polytechnic School at Zurich 1861, and in that at Stuttgart 1866. He published a number of histories of art, architecture, and the ecclesiastical architecture of the middle ages—on which subjects he was an authority; and wrote the text of the illustrated Madonna, Titian, Paul Veronese, and Michael Angelo Albums. He d. 1893, Apr. 5.

LUBLIN, lô'blǐn: govt. of Russian Poland; bounded n. by the govt. of Siedlee, e. by Volhynia, s. by Galicia, w. by Radom; traversed by the Wieprz, Bug, and Vistula rivers; 6,501 sq. m.; cap. Lublin. It has a level surface and fertile soil, and contains important woolen and linen manufactories. The cap. is the handsomest and most important town in Poland after Warsaw, contains the church of St. Nicholas (founded 986), and holds three annual fairs.—Pop. (1890) 512,107; (1897) 1,159,463.

LUBLIN, lô'blin: city in Russia, capital of the Polish govt. of L., on the left bank of-the Bistritz, a feeder of the Wieprz, a branch of the Vistula; 96 m. s.e. of Warsaw. L. dates from the 10th c., and among the objects of interest which it presents to tourists, the church of St. Nicholas (founded 986) and the ruins of a royal castle are notable. It was formerly fortified. The chief buildings are the town-hall, the Sobieski palace, cathedral, Jews' synagogue, Piarist college, and several schools and hospitals. It has several manufactories of woolen and linen goods, in which, as well as in corn and Hungarian wine, it has extensive trade. Three large fairs, each lasting one month, are held here annually. Pop. (1881) 34,980; (1891) 48,475; (1897) 50,152.

LUBRICANTS, lô'brǐ-kants: substances, usually fluids, put between solid surfaces in machinery, that are subject to friction, in order to lessen that friction, thus diminishing the wear and tear of the parts, and the waste of energy, of the machinery. Animal and vegetable oils and mineral oils, are the common lubricants. mal oils the most suitable are sperm, lard, neats-foot, tallow, and whale oil; of the vegetable, those most used are the oil of the olive, cotton seed, and rape seed, the last two generally in combination with other more expensive oils. The use of mineral oils for this purpose has increased very much, especially in combination with other oils, for two reasons: first, because of their greater cheapness; and second, because they contain fewer volatile constituents than the vegetable oils, and there is therefore less loss by evaporation, For machinery, however, where there is heavy pressure exerted between the sliding surfaces, mineral oils are too thin to be satisfactorily used, except in combination with other oils

LUBRICATE—LUCANUS.

having more body. To prevent the waste of oil in lubricating machinery, various devices have been invented by which the oil ean be used several times over. There are used either automatic arrangements by which the drippings are pumped up again upon the bearings; or pans are supplied in which the oil dripping from the bearings is eaught up, and then is used again to refill the oil-eups. If used too often the oil becomes worn out by being filled with dust and with minute partieles of metal worn off from the machinery. Even then it can be purified and again made available by being washed in a solution of earbonate of soda, or potash, and chloride of calcium in boiling water. Still there is always more or less loss from evaporation, and from certain chemical changes taking place in the oil on account of the heat generated by friction, which gradually render it unfit for lubricating purposes.

LUBRICATE, v. lô'brǐ-kāt [L. lubrīcātus, rendered slippery; from lubrīcus, slippery: It. lubrīcare]: to make smooth or slippery, as by oil, mueus, and the like, smeared over. Lu'bricating, imp. Lu'bricated, pp. Lu'bricator, n. -tēr, one who or that which lubricates. Lu'brication, n. -kā'shŭn, also Lu'brification, n. -fǐ-kā'shŭn, the act or operation of making smooth and slippery, as machinery by oil. Lubricity, n. lô-brīs'ī-tī, smoothness, slipperiness; apthess to glide over any part; the property of facilitating the motion of bodies in contact; instability; wantonness; lewdness.

LU'CA GIORDA'NO: see Giordano, Luca.

LUCANIA, lū-kā'nĭ-a: old dist. of s. Italy, or Magna Grecia, inhabited originally by the Chones and Œnotrians; subjugated by Rome B.C. 272. The anc. L. is now chiefly the province of Basilicata (q.v.), and in small part, of Principato.

LUCANUS, lū-kā'nŭs, MARCUS ANNÆUS (OF LUCAN): chief Roman poet of the Silver Age: 39, Nov. 3-65; b. Corduba (modern Cordova), in Spain. He was brought to Rome in infancy by his father, younger brother of the philosopher Seneea. He received an education of the best kind, was school-fellow of Persius, and friend of Emperor Nero, and entered on life with brilliant prospects. He became quæstor and augur, and declaimed and recited in public with high applause. But his prosperity and himself were equally short-lived. He lost the favor of Nero, who was jealous of his poetry and his fame. Under the sting of this annoyance, he joined the eonspiracy against Nero's life in 65. It is painful to read in Gorges, that when arrested with others after the betrayal of the plot, he tried to save his life by accusing his mother of complicity. Tacitus adds that letters were forged in L.'s name implicating his father also. But the emperor did not grant him a reprieve; and he destroyed himself by having his veins opened, dying with a certain ambitious composure, at

LUCANUS -LUCARIS.

27 years of age. Whatever the faults of L.'s characte. —and in the brief notices we have of him, both his vanity and levity are apparent—he holds a conspicuous place among the poets of Rome. The only work of his is the Pharsalia, an epic in 10 books, on the civil war between Cæsar and Pompey. As an epic, it is, as Niebuhr somewhat quaintly says, an 'unfortunate' performance, for it proceeds in the manner of annals, and lacks the comprehensiveness, unity, and learning of the greatest works of its class. Nor is its style, generally speaking, good, for it is often turgid and obscure, and marked with those defects of taste which belong to poems inspired by a rhetorical age and school of writ-But when every deduction has been made, the Pharsalia affords ample proof that L. was a man of real and powerful genius. There is an eye for the sublime both in the moral and in the physical worlds; there is all the vigor of poetic oratory in its declamations; and there are felicities of epigram which have secured to many a line a fresh and constant life, as part of the familiar literature of the world. L. was very popular in the middle ages; and in modern times, his poem has been a particular favorite among lovers of political freedom—especially among the former school of European classical republicans. There is a well-known English translation of L. by Rowe, which Dr. Johnson thought one of the best translations in the language.

LUCA'NUS-LUCAN'IDÆ: see STAG BEETLE.

LUCARIS, lū-kū'ris, Cyril: theologian of the Greek Church: b. in the island of Candia 1572, d. some time after 1637, June. He studied first at Venice, afterward at Padua, and subsequently visited Germany, where he formed intimate relations with the Prot. doctors, and carried back into Greece their spirit and their dogmas. Ordained a priest, he rose, in the course of years, to the highest dignity in the Greek Church, being elected Patriarch of Constantinople 1621. He still cherished his Prot. opinions, and endeavored even to promulgate them in the church over which he ruled; but his course excited violent opposition among the clergy, and L. was in consequence banished to Rhodes. Through the influence of the English embassador he was soon reinstated in his office. Unluckily, a confession of faith that he had caused to be printed, quite heretical—i.e., Protest-ant—in its character, fell into the hands of his adversaries, and he was again involved in difficulties. In 1636, he was banished to the isle of Tenedos, and though recalled after a few months, in 1637, June, he was seized in Constantinople, hurried on board a vessel, and his fate was never ascertained. According to some, he was strangled in the ship which bore him off; according to others, he suffered this fate in a castle on the shores of the Black Sea. His Protestantism has been repeatedly condemned by Greek synods,

LUCARNE-LUCCA.

LUCARNE, $l\bar{u}'k\hat{a}rn$: dormer window (see under Dormant): the name is generally applied to the small dormers in church spires.

LU'CAS of LEYDEN: see LEYDEN, LUCAS VAN.

LUCAY'OS: see BAHAMAS.

LUCCA, lôk'kâ: chief town of the Italian province of L. (see Lucca, Duchy of); in a fine plain, bounded by picturesque hills, and irrigated by the Serchio, 12 m. n.e. of Pisa. The commercial activity of its inhabitants obtained for it the name 'Luccal'Industriosa.' Its great trade is in olive-oil and silk, and it was the first place in Italy where the production and manufacture of silk were successfully introduced. The town is surrounded by ramparts, which form a delightful promenade, and command a fine view of the whole valley of the Serchio; the streets are mostly narrow and crooked, but well paved; private dwellings are commodious, public edifices numerous and interesting. The cathedral contains several fine paintings. A splendid aqueduct, planned during the reign of Princess Elisa Bonaparte, and executed later, supplies the town with water, and repays inspection. The environs abound in delightful villas. At several places in a charming valley, about 16 m. from the town, are the famous mineral baths of L. (Bagni di Lucca), temperature from 96° to 136° F. The waters are exported to all parts of Italy.—Pop. (1891) 20,421; (1901) 74,971.

LUC'CA, Duchy of: formerly a small independent state, now a province of central Italy; bounded n. by Modena, e. and s. by Tuscany, w. by the Gulfs of Genoa and Massa; 512 sq. m. The surface is very diversified; the largest stream is the Serchio. L. is famed for extreme fertility, and for superior agriculture, which serves as model to the whole Italian peninsula. Principal products are grapes, olives, grain, mulberries, chestnuts, and vegetables. The marshy flats on the coast afford excellent pasture for cattle. Manufactures are silks, oil (esteemed the best in Italy), glass, paper, linens, cottons, etc.; the principal export is oil. The Lucchesi are a frugal, shrewd race; numbers leave home in search of employment, and they form a large proportion of the itinerant figure-venders, organ-grinders, and stuccoworkers of Europe and America.

L. (anc. Luca) was made a Roman colony B. c. 177. It was erected into a duchy by the Lombards, and recovered its liberty 1055, when the chief town, Lucca (q.v.) became a free city. In 1327 it was a duchy, and was ruled by the celebrated Castruccio Castracani. In 1370 it became an independent republic, was erected into a principality 1805 by Napoleon, for his sister Elisa Bacciochi, and passed to Maria Louisa of Spain 1815. Her son, Duke Carlo Luigi, ceded it to Tuscany 1847, on obtaining possession of Parma and Piacenza; and 1860 it was annexed to Sardinia. It now forms one of the Tuscan

provinces of Italy. Pop. (1901) 319,523.

LUCCA, lôk'kâ, PAULINA: opera singer: b. Vienna: 1842, Apr. 25. When 14 years old she entered the chorus of the Kärnthner Thor Theatre and the choir of Karls Kirche, and when 17 made her first appearance on the stage in an important part at the Olmütz Theatre as Elvira in the opera of Ernani. The following year she sang in Norma and the Huguenots at Prague, and 1861–72 she was established in the Berlin Opera House, and also filled brief engagements in London, St. Petersburg, and other cities. In 1872, Sep., she made her first appearance in America & the New York Acad. of Music, and at once attained wide popularity. She was the favorite pupil of Meyerbeer, and created the part of the heroine in his opera L'Africaine. Her first husband was Baron von Rhaden, and second Baron Wallhofen, both resigning their commissions in the German army to marry her.

LUCE, n. lôs [L. luciŭs, a fish, supposed to be the pike]: a pike full grown. Luces, n. plu. lôs'ĕs, in Shakespeare, probably means 'lice.'

LUCE, lūs, Stephen Bleecker: naval officer: b. Albany, N. Y., 1827, Mar. 25. He entered the U. S. navy as midshipman 1847: became lieut. 1855, lieut. commander 1862, commander 1866, capt. 1872, commodore 1881, and rear-admiral 1885; and was retired 1889, Mar. 25. During his naval career he was on sea service 33 years, shore or other duty 12, and unemployed 2. He was actively employed during the civil war along the Atlantic coast; commanded the Juniata of the European squadron 1869–70; founded the U. S. Naval War College, and was its pres. 1884–86; commanded the North Atlantic squadron 1886–88, and was active in establishing the U. S. naval training system. He published Seamanship (New York 1863), and edited Naval Songs (1883).

LUCENA, $l\bar{u}$ -sē'na, Sp. $l\hat{o}$ -thā'nâ: town of Spain, province of Cordova, 40 m. s. of the city of Cordova; pieturesquely situated between two hills. The neighboring territory is famous for its aprieots and its breed of horses. L. is historically interesting, as the seene of the capture (1483, Apr. 21) of Boabdil, King of Granada. Pop. 17,000.

LUCENT, a. lô'sĕnt [L. lucens or lucen'tem, shining]:

bright; shining; splendid.

LUCERA, lô-chā'râ (anc. Luceria): town of s. Italy, province of Foggia on an eminenee 10 m. w.n.w. of Foggia. It eontains a college, a good museum, a cathedral, and a splendid episcopal palace. There is large trade in cheese and cattle. Numerous inscriptions and fragments of ancient sculpture have been found. Pop. about 13,500.

LUCERN, or LUCERNE, n. lô'sern [F. luzerne—said to be connected with W. llysiau, plants, herbs: comp. Lucerne, in Switzerland], (Medicāgo satīvă, ord. Leguminosæ, sub-ord. Papilionācĕa): leguminous plant, with crect stem one to two ft. high, obovate-oblong and serrated leaves, long vacemes, violet-purple flowers, and

LUCERNAL-LUCERNE.

pods bearing many seeds. It is often called alfalfa, and the seed is widely sold under this name; known also as Spanish clover and California clover. It originated, probably, in Europe, and was extensively cultivated and lighly valued by the Romans. In some S. American countries, to which it was doubtless brought by the Spaniards, it is still largely produced, and on some of the vast pampas it grows wild with great luxuriance. It was brought to this country about the beginning of the 19th c., but for a long time attracted little attention.

Where the climate and soil are favorable, L. is one of the most valuable of our forage plants. Sheep soon destroy it by close grazing, but it makes excellent pasturage for cows, is one of the best soiling crops, and yields a large quantity of palatable and nutritious hay. It thrives throughout the southern and southwestern states, and is grown to some extent in the northern states; but where the winters are severe it requires sheltered localities. L. does not thrive on heavy clays or on light lands underlaid by an impervious sub-soil. It withstands drought remarkably well. The roots often reach a depth of 15 ft., and, like other clovers, tend to enrich the soil.

Land for L. should be deeply plowed and the surface finely pulverized. Seed, which should be not more than one year old, should be sown in spring, in drills 15–18 inches apart; 12–18 lbs. per acre is required. Broadcast sowing is sometimes practiced, but is not advisable: it requires one-half more seed than drill sowing. During the first season weeds should be kept down by frequent cultivation. After that the land should be harrowed each spring, and a dressing of manure or commercial fertilizer applied. Under this treatment reseeding will not be required for 15 or 20 years. L. can be mown two to five times each summer, and should always be cut before the flowers appear.

LUCERNAL, a. lū-sėr'nal [L. lucerna, a lamp]: of or pertaining to a lamp or other artificial light; a microscope in which the object to be examined is illuminated by a lamp.

LUCERNE, lô-sern': canton in the centre of Switzerland, n.w. of the central mass of the Swiss Alps; about 577 sq. m. The soil is generally fruitful, and much grain and fruit are produced. In the more mountainous parts, the rearing of cattle is carried on to a greater extent than anywhere else in Switzerland. The highest elevation attained by the Alps in this canton is in Mt. Pilatus, steep jagged ridge of several peaks, the highest 7,290 ft. The principal stream is the Reuss, outlet of Lake L.; principal lake, that of Lucerne. The inhabitants are mostly of German race and language, and all belong to the Rom. Cath. Church, except 5,000-6,000 Protestants, to whom the free exercise of their religion was accorded first 1828. The constitution of L. is a representative democracy; 100 deputies form the Great

Council, whose pres. bears title of Schuliheiss (Judge). Pop. (1888) 135,722; (1900) 146,159.

LUCERNE': city in Switzerland, cap. of the canton of L.; on the Reuss, where it issues from the n.w. extremity of the Lake of L. Near the lake, rising from the middle of the Reuss, is an old tower, said to have been anciently a light-house (lucerna), whence the name of the town. The arsenal is one of the most important in Switzerland, containing many old weapons used at the battle of Sempach. L. has a theatre, a public library, with a collection of natural history, manufactures of silks, cottons, flax, hemp, gloves, etc. Pop. (1900) 29,633.

LUCERNE', Chevalier Anne-Cesar de la: see Lu-

ZERNE, Chevalier.

LUCERNE', Chevalier Anne-César de la: see Luzerne, Chevalier.

LUCERNE', LAKE OF, OF LAKE OF THE FOUR FOREST CANTONS (Uri, Unterwalden, Schwyz, and Lucerne), because its shores are formed by these: one of the most beautiful sheets of fresh-water in Switzerland or Europe; length from Lucerne to Flüelen, about 22 m.; average breadth, about 1½ miles. Its form is extremely irregular. The chief towns on its banks are Lucerne, Küssnacht, and Alpnach, at the n.w. and Flüelen, near its s.w. extremity. It is navigated by several steamboats.

LU'CIA, St.: one of the Windward Islands: see St. Lucia.

LUCIAN, $l\bar{u}'shan$ or $l\bar{u}'sh\bar{\imath}-an$: classic satirist and humorist of the first rank: b. Samosata, in Syria, probably in the earlier part of the 2d c.; d. probably near the end of the 2d c. He tells us, in *The Dream*, that his parents were poor, and could not afford him a learned education. He was apprenticed to an uncle who was a statuary, that he might learn that trade; but he broke a marble slab, was beaten, and abandoned the craft, betaking himself to the study of letters. For a long time he led an unsettled life, visiting the most of Greece, Italy, and Gaul, in the last of which countries he practiced with success as a teacher of rhetoric. He is thought to have returned to his native country when about 40 years of age, after which time all his masterpieces were composed. The last thing known about him is, that he was made a procurator of part of Egypt by Emperor Commodus. The statement of Suidas, that L. was torn to pieces by mad dogs for his impiety, finds no credence with modern scholars; neither does that of Volaterranus, that he was an apostate from Christianity. The dialogue entitled *Philopatris*, long attributed to L., certainly shows an intimate knowledge of Christianity; but no critic now believes it his production. The fact is, L. was one of that class of men who do not readily embrace, any form of religion-men whose sharp critical minds see or imagine too many flaws to make a pious or reverential spirit easy for them. In philosophy, as well as in religion, he accepted no leadership, kelieving

neither in gods nor in men. Philosophers are indeed the constant subjects of his humorous ridicule and pungent wit, aided by all the resources of a richly inventive The popular Pagan mythology he overwhelms with sarcasm. His Greek style is admirably clear, fluent, easy, and elegant. His writings are disfigured with the profligacy of his times. His works have been classified under seven heads: 1. Rhetorical; 2. Critical; 3. Biographical; 4. Romances; 5. Dialogues; 6. Miscellaneous; 7. Poems. Of these, the most celebrated are his Dialogues, the principal of which are—The Sale of Lives; Dialogues of the Gods; The Fisherman, or the Revivifild; The Banquet of the Lapithæ; Timon the Misan-thrope; Dialogues of the Dead; and Icaro-Menippus, or Above the Clouds. The best of his romances, and a work of Rabelaisian humor, is True Histories, an exceedingly droll account of a voyage to the moon; of which book he says that the only true statements in his 'true history' is that it contains nothing but lies from beginning to end. The editio princeps of L. appeared, Florence, 1496; an excellent one by Hemsterhuis and Reitz (1730): Lehmann (1831); and Bekker (1853). L. has always been a great favorite with scholars, and has been translated into most of the European languages. There are English versions, whole or partial, by Franklin (1781; 4 vols., incomplete), Tooke, Abbott, and Lucas Collins (1873).

LUCID, a. lô'sĭd [F. lucide—from L. lucĭdus, bright; clear: It. lucido]: clear; distinct; easily understood; not darkened or confused, applied to the intellect. Lu'-cidly, ad. -lī. Lu'cidness, n. -nĕs, or Lucidity, n. lô-sĭd'ĭ-tĭ [F. lucidité]: brightness; clearness.—Syn. of 'lucid': bright; shining; glittering; transparent; lumiuous; reasonable; sane; in OE., transparent; pellucid.

LU'CID INTERVAL: intermission in certain forms of mental disease—forms which are characterized by exaltation or perversion, and not by impairment of the faculties or feelings. There may thus be a cessation or suspension of the fury in mania; there cannot be repair or enlightenment of the obscurity in idiocy or senile dementia. It may consist in the mere substitution of clearness and calmness for violence and confusion; in the occasional recognition of his actual condition and external relations by the lunatic; or in the re-establishment of intelligence and natural feeling so complete as to differ from sanity solely in the want of permanence. The duration is likewise sometimes so considerable and regular as to divide the mental and moral life of the individual into two halves. It has been believed that even in such cases the interval is a part or link of the disease, and that there invariably exists an under-current of unsoundness. It is found to be extremely difficult to distinguish this state from real and trustworthy restoration to reason, except by reference to the test by duration. Practically and legally, these conditions have been held to be identical. A will executed during a lucid inter-

LUCIFER-LUCKENWALDE.

val, though that was extremely transitory, and though the testatrix unloosed the straps by which her hands had been confined, in order to execute the document, has been held valid; all that appears to be required, under such circumstances, is to prove that the conduct of the individual bore the aspect of rationality and health. It has been observed that, immediately before death, a small portion of the insane regain lucidity, and, after years of extravagance and absurdity, die in possession of comparative sense and serenity. This change is supposed to depend upon the failing powers of the circulation.—Burrows, On Insanity; Shelford, On Law of Lunatics, p. 289.

LUCIFER, n. lô'sĭ-fer [L. lucĭfer, light-bringing—from L. lux, or lūcem, light; fero, I bring]: the planet Venus when appearing as the morning star; a friction-match (see Matches).—The name occurs in the Bible only once, Is. xiv. 12, where it poetically designates the king of Babylon fallen from his height of pride. Tertullian and others, misunderstanding this passage as referring to the fall of Satan from heaven, gave occasion for the common misapplication of the name to the great spirit of evil.

LUCIMETER, n. lô-sim'ĕ-tèr [L. lux, lucis, light; Gr. metron, measure]: an instrument for measuring the intensity of light; a photometer.

LUCINA, $l\bar{u}$ - $s\bar{i}'na$ [from lux, light]: in Rom. myth., a surname of Juno as goddess of light, especially as presiding over birth, or the bringing of offspring forth into the light.—Also the name of an Egyptian goddess.

LUCI'NA: genus of lamellibranchiate mollusks, allied to Veneridæ (see Venus). Lucinidæ is the family. The shell is orbicular, or nearly so, and bears a very long impression of the anterior muscle. The animal has a long, generally cylindrical foot. The species are numerous, are found in almost all seas, and at all depths at which life is known to exist, burrowing in the sand or mud. There are also many fossil species in the more recent formations.

LUCK, n. lŭk [Ger. glück; Dut. luk, happiness, fortune: Dan. lykke; Icel. lukka, luck]: a casual event, good or ill, affecting any one; fortune; chance. Lucky, a. lŭk'i, successful; fortunate. Luck'ily, ad. -i-li, fortunately; by good hap. Luck'iness, n. -i-nĕs, good fortune; casual happiness. Luck'less, a. lĕs, without good luck; unsuccessful. Luck'lessly, ad. -li. Luck'lessness, n. -nĕs, state of being unlucky.—Syn. of 'lucky': prosperous; happy; auspicious.

LUCKENWALDE, lôk'én-vâl-déh: town of Prussia, govt. of Potsdam, cap. of the circle of L.; on the river Nuthe, 30 m. s.s.w. of Berlin. It has cloth manufactures. Pop. (1885) 16,109; (1890) 18,008.

LUCKIE-LUCRETIUS.

LUCKIE, n. $l\breve{u}k'\widetilde{\imath}$ [Icel. hluki, an old woman]: in Scot., an old or elderly woman; a grandmother; the mistress of an ale-house.

LUCKNOW, *lŭk'now*: district in Oudh, British India; under jurisdiction of the lieut.gov. of the N. W. Provinces; 26° 30′—27° 9′ n. lat., 80° 36′—81° 15′ e. long., 989 sq. m. It is almost wholly a plain, well-wooded, fertile, and highly cultivated; though near the rivers are extensive saline barrens. Pop. (1881) abt. 700,000, three-quarters being Hindus.—The *division* of L. in which the dist. is a part, had (1891) 4,504 sq. m.; pop. 2,851,600.

LUCK'NOW: city, cap. of Oude, British India; 360 ft. above sea-level, on the right or s.w. bank of the Gumti, by which it has navigable communication upward for many miles, and downward all the way to the Ganges; lat. 26° 52′ n., and long. 81° e.; 610 m. from Calcutta. The place is connected with the opposite side of the river by three bridges, one of stone, another of boats, and a third Though L. does not appear to contain any very ancient buildings, it is yet understood to be older than any one of the other great cities of India, claiming to have been founded by Lakshmana, brother of Rama. The middle portion, which may be said to represent the original town, contains, with the exception of a few brick-houses, little but mud walls and straw roofs. either side of these central hovels are the handsomer portions of L., generally dating, however, no further back than 1775. As an illustration at once of manners and of government, all classes, until the annexation of Oude in 1856 were wont to go fully armed, the shopkeepers being equipped with swords and shields. In connection with the mutiny of 1857, L. was the point of foremost interest, surpassing every spot in the energy and obstinacy of its defense against the insurgents, and almost equalling Delhi itself in the grandeur and brilliancy of the operations, which recovered it, after a temporary abandonment, from the rebels.—Pop. (1881) 261,303; (1891) 273,028.

LUCON', or Luzon': see Philippine Islands.

LUCRATIVE, a. lô'kră-tiv [F. lucratif, profitable—from L. lucrātīvus; It. lucrativo—from L. lucrum, gain: It. lucro; F. lucre, lucre]: gainful; profitable. Lu'crativeLy, ad. -lǐ. Lucre, n. lô'kėr, profit; gain in money—always in an ill sense.

LUCRETIA, $l\bar{u}$ - $kr\bar{e}'sh$ i-a: Roman matron, wife of Collatinus. Outraged by the son of King Tarquinius Superbus, she stabbed herself B.C. 509. The tragedy occasioned a revolution, in which the Tarquins were driven from Rome and the republic was established.

LUCRETIUS, lū-krē'shĭ-ŭs (Titus Lucretius Carus): Roman philosophical poet. Of the life of L. we know almost nothing with certainty, as he is mentioned merely in a cursory manner in contemporary literature. Hieronymus, A.D. 340-420, in his translation of the

Chronicle of Eusebius (264-340), gives the date of his birth B.C. 95 (according to others, 99); but he does not specify the source from which his statement is derived. It is alleged, further, that L. died by his own hand, in the 44th year of his age, having been driven frantic by a love-potion which had been administered to him: that he composed his works in the intervals of his madness: and that these works were revised by Cicero. Donatus (Life of Virgil), on the contrary, affirms that his death occurred B.C. 55, on the very day on which Virgil assumed the toga virilis. The stories of the philtre, the madness, the suicide, and the revision of the works by Ciccro, rest on very insufficient authority, and must be received with extreme caution. The peculiar opinions advanced by L. would render him specially obnoxious to the early Christians, and it is possible that the latter may have been too easily led to attribute to him a fate which, in its mysterious nature and melancholy termination, was deemed a due reward for the bold and impious character of his teachings. The great work on which the fame of L. rests is that entitled De Rerum Natura, a philosophical didactic poem in six books, dedicated to C. Memmius Gemellus, published about B.C. 56. L. was a reverent follower of the doctrines of Epicurus (q.v.), and his poem is in large measure an exposition of the physical, moral, and religious tenets of that philoso-The great aim of the poet was to free his countrymen from the trammels of superstition, and to raise them above the passions and the weaknesses of man's natural condition. With his master, Epicurus, L. adopted the atomic theory of Leucippus, which taught that certain elementary particles, existing from all eternity, and governed by fixed laws, combined to form the universe of matter; that the existence and active interference of a supreme overruling deity was not necessary to be supposed in order to account for the marvellous and abnormal in nature; and that whatever appeared to be miraculous, was in reality not so, but was merely the result of certain fixed laws, which operated with unerring precision, and in a natural process. Regarded mercly as a literary composition, the work of L. stands unrivalled among didactic poems. The clearness and fulness with which the most minute facts of physical science, and the most subtle philosophical speculations, are unfolded and explained; the life and interest thrown into discussions in themselves repulsive to the bulk of mankind; the beauty, richness, and variety of the episodes interwoven with the subject-matter of the poem, combined with the majestic verse in which the whole is clothed, render the De Rerum Natura, as a work of art, one of the most perfect which antiquity has bequeathed to us. It reveals a high degree of courage, sincerity, and strength. L.'s writings have a new interest in recent years, as they show the dealing of the ancient pagan thought with the same problems of existence with which

LUCUBRATION—LUCULLUS.

modern science concerns itself. It is not diffcult to detect the echo of his theories in eminent writers of the present day. For a fuller estimate of L. and his poetry, see Prof. Sellars's essay in The Roman Poets of the Republic (Edin. 1863). The editio princeps of L. was published at Brescia about 1473; only three copies are known to exist. The best editions of L. are by Wakefield (Lond. 1796, 3 vols. 4to, and Glas. 1813, 4 vols. 8vo); by Forbiger (Leip. 1828, 12mo); by Lachmann (Berlin 1850, 2 vols.); and by Prof. Munro (3d ed. 1870). The De Rerum Natura has been translated into English verse by Thomas Creech (Lond. 1714, 2 vols. 8vo); and by John Mason Good (Lond. 1805-7, 2 vols. 4to); into English prose by the Rev. J. S. Watson, M.A. (Lond. Bohn's Classical Library, 1851, post 8vo); and by Prof. Munro, at the end of his edition.

LUCUBRATION, n. lô'kū-brā'shŭn [L. lucubrātĭōnem, a working by lamp-light, or at night—from lucubrārĕ, to compose by lamp-light—from lux, light]: study in the night by lamp or candle light; any composition produced by meditation in retirement. Lucubratory, a. lô'kū-brā'tēr-ĭ, composed by night or by candle-light.

LUCULENT, a. lô'kū-lĕnt [L. luculen'tus, full of light—from lux, light]: clear; transparent. Lu'culently, ad. -lĭ.

LUCULLITE, n. lô-kŭl'līt: a variety of black marble—so called because it was first brought by Lucullus to Rome from an island in the Nile.

LUCULLUS, lū-kŭl'ŭs, Lucius Licinius (surnamed PONTICUS): very distinguished Roman general: born, it is conjectured, about B.C. 110; d. abt. B.C. 57. In the first Mithridatic war, he commanded the fleet as legate of Sulla. B.C. 77, he filled the office of pretor, and immediately afterward held the administration of the province of Africa. B.C 74 he was chosen consul with Marcus Aurelius Cotta, and got Cilicia for his province, while Cotta had Bithynia. Both consuls arrived in Asia about the close of B.C. 74. Cotta was soon utterly defeated by Mithridates, who had burst into Bithynia at the head of 150,000 troops, forced to take refuge in Chalcedon, and there was besieged by the victor. L., however, advanced to his relief at the head of 35,000 men, compelled Mithridates to raise the siege, and almost annihilated his army on its retreat. In B.c. 71 Pontus became subject to the Romans. The measures which L. now introduced in the govt. of the province of Asia, to secure the provincials against the fearful oppressions and extortions of farmers of the taxes and usurers, especially his fixing a uniform and moderate rate of interest for all arrears, show that he was a just, wise, and humane administrator; but though the cities of Asia were grateful for his elemency, the equestrian order in Rome (who had the farming of the taxes) became implacably bostile to him, and his own troops grew disaffected on account of the strictness of his discipline. In the spring B.C. 69, he marched into Armenia, with a small force of 12,000 foot and 3,000 horse, and gained a complete victory over Tigranes at the head of an army of 220,000 men. In the following year, he gained another great victory at the river Arsanias over a new army led against him by Tigranes and Mithridates; but the mutinous spirit of the legions—in spite of these splendid triumphs -daily increased, and when he wished to besiege Artaxata, cap. of Armenia, the soldiers refused to advance further. After this, he could do nothing; not a soldier would serve under him; and he was superseded by Pompey, and left Asia B.C. 66. The cabals of his enemies so much prevailed, that he was three years in Rome before he obtained his triumph. In conjunction with the aristocratical party, he attempted to check the increasing power of Pompey, and the attempt caused the coalition known as the first triumvirate. But he was ill fitted to act as leader against such unscrupulous men, and soon withdrew altogether from political affairs. During his public career, he had acquired (but not unfairly) prodigious wealth; and he spent the remainder of his life surrounded by artists, poets, and philosophers, and exhibiting in his villas at Tusculum and Neapolis, and in his house and gardens at Rome, a luxury and splendor which became proverbial. A single supper—on particularly grand occasions—would cost him 50,000 denarii (more than \$8,600). He collected a great library, and his pleasure-grounds were the wonder of his times. Toward the close of his life, his faculties began to decay and his property was placed under the management of his brother. L. was a man of great military talent, humanity, liberality, and love of justice; his great fault was love of pleasure; not exactly vicious pleasure, for he was an epicure rather than a profligate; yet so sensual, that with a certain aristocratic elegance, it seems to have occasioned in his soldiers the belief that he was grossly selfish and unsympathetic.

LUCUMO, n. lô'kū-mō [L.—from Etruscan lauchme, one inspired]: in class. antiq., an appellation of the Etruscan princes and priests, corresponding to the Roman patricius, of the rank of the Conscript Fathers; hence, noble. The Romans, mistaking this title of dignity for a proper name, bestowed it on the son of Demaratus of Corinth,

afterward Tarquinius Priscus, King of Rome.

LUDDITES, lud'its: organized bands of rioters in England, in Nottingham, and the neighboring midland counties, 1811-16; named from Ned Lud, a person of weak intellect who in anger had destroyed a weaving-frame about 30 years before. The L., under the distress caused by commercial depression and poor harvests, attributed their sufferings to the machinery which had displaced manual labor; and destroyed the machinery. Improved harvests and strong repressive legislation with several capital executions, ended their rioting.

LÜDENSCHEID-LUDWIG Î.

LÜDENSCHEID, lü'den-shīt: town of Westphalia, 33 n.e. of Cologne. It has cotton-mills and hardware manufactures. Pop. (1880) 11,024; (1890) 16,169.

LUDICROUS, a. lô'dĩ-krŭs [L. ludĭcrus, sportive, in jest—from lūdus, play, sport]: adapted to raise laughter; droll; burlesque. Lu'dicrously, ad. -lĩ, in a manner that may excite laughter. Lu'dicrousness, n. -nĕs, the quality of exciting laughter. The Ludicrous, see Laughter.—Syn. of 'ludicrous': sportive; laughable; ridiculous; comical or comic.

LUDINGTON, lud'ing-ton: city, cap. of Mason co., Mich.; on Lake Michigan at the mouth of Père Marquette river, and on the Flint and Père Marquette railroad, 84 m. n.w. of Milwaukee. It was laid out 1867; has a commodious harbor; is connected with Milwaukee by two lines of steamers; and contains several saw, lumber, planing, and shingle mills, 2 foundries and machine shops, carriage factory, 4 churches, and one national bank (cap. \$50,000). Pop. (1890) 7,517; (1900) 7,166.

LUDLOW, lŭd'lō: market town and municipal borough of Shropshire, England, at the confluence of the Corve and Teme, 25 m. s.s.e. of Shrewsbury. It is an old and very interesting town; its parish church dates from the reign of Edward III.; its free school was founded by Edward IV. The castle, now a magnificent ruin, was at one time one of the most important strongholds against the Welsh. Here Arthur, eldest son of Henry VII., celebrated his marriage with Catharine of Aragon, afterward wife of Henry VIII.; and here, 1634, Milton's masque of Comus was performed for the first time. The oldest charter of L. is from Edward IV. Pop. (1881) municipal borough, 5,035; (1895) 6,445.

LUD'LOW FORMA'TION: uppermost division of the Silurian Strata (q.v.), consisting of an extensive series of indurated argillaceous beds, with bands of dark-gray argillaceous limestone. The town of Ludlow, England, stands upon the higher strata of this formation.

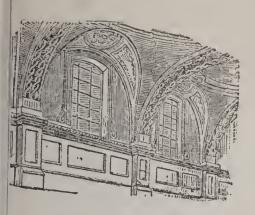
LUDUS HELMONTII, n. lū'dŭs hĕl-mŏn'shĭ-ī [from Jan Baptista Van Helmont, Belgian chemist and physician of the 17th c., who believed in the efficacy of such stones]: calcareous stone, of unknown nature, used by the ancients in calculous affections. The term was applied also to every species of calculus concretion occurring in the human body.

LUDUS PARACEL'SI [from Paracelsus (q.v.)]: kind of cubical pyrites, named from resemblance in shape to a die; esteemed as a remedy in calculus: see Ludus Helmontii.

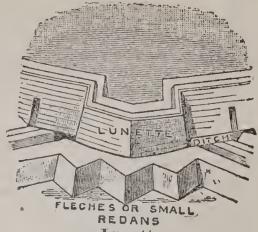
LUDWIG I., lôd'vich, KARL AUGUST, King of Bavaria: 1786, Aug. 25—1868 (reigned 1825–48); eldest son of King Maximilian Joseph. In 1810 he married Princess Theresa of Saxe-Hildburghausen. As crown prince, he took little part in politics, but busied himself in science and

PLATE

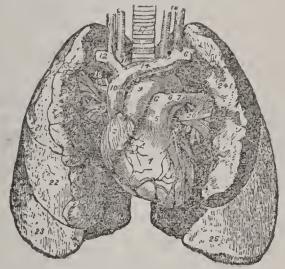
Lunette Lyrate



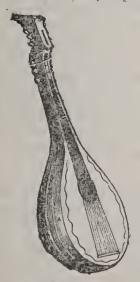
Lunette, St. Paul's, London.



Lunette.



Anatomy of the Lungs and Heart.—1, The right ventricle; the vessels to the left of the number are the middle coronary artery and veins, and those to its right the anterior coronary artery and veins; 2, Left ventricle; 3, Right auricle; 4, Left auricle; 5, Pulmonary artery; 6, Right pulmonary artery; 7, Left pulmonary artery; 8, Remains of the ductus arteriosus; 9, Arch of the aorta; 10, Superior vena cava; 11, Arteria innominata, and in front of it the right vena innominata; 12, Right subclavian vein, and behind it, its corresponding artery; 13, Right common carotid artery and vein; 14, Left vena innominata; 15, Left carotid artery and vein; 16, Left subclavian vein and artery; 17, Trachea; 18, Right bronchus; 19, Left bronchus; 20, 20, Pulmonary veins; 18, 20, form the root of the right lung; and 7, 19, 20, the root of the left; 21, Superior lobe of the right lung; 22, Middle lobe; 23, Its inferior lobe; 24, Superior lobe of the left lung; 25, Its inferior lobe.



Lute,



Lycopodium Selago: a, Leaf: b, Sporangium, in the axil of bract; c, Spores-magnified.



Lyrate Leaf.

LUDWIGSBURG-LUG.

the fine arts, and lived very economically, in order that he might be able to spend large sums in forming a magnificent collection of masterpieces of sculpture known as the Glyptothek. He commenced his reign by granting some reforms. His reign was distinguished by the encouragement of the fine arts, and the erection of magnificent public buildings; he also inaugurated the first railway in Germany from Nuremberg to Furth—and executed the fine canal Ludwigskanal, which unites the Danube and the Maine. But it was no less characterized by the prevalence of ultramontane influence, intolerance toward all who did not belong to the Church of Rome, and contempt of constitutional rights and forms, while the king's conduct gave great occasion of scandal, particularly in his connection with the dancer Lola Montez (created Countess of Landsfeldt). On account of the revolutionary disturbances 1848, Feb. and Mar., L. resigned the crown in favor of his eldest son, Maximilian.

LUDWIGSBURG, lôd'vichs-bûrch: town of Würtemberg, and the second royal residence; about 8 m. n. of Stuttgart; founded 1706 by Duke Eberhard Ludwig, in consequence of a quarrel with the Stuttgarters. L. was laid out with painful regularity, and has an artificial and lifeless look. It is the principal dépôt for soldiers in Würtemberg, whence it has the name of the Swabian Potsdam: it has an arsenal, cannon-foundry, military acad., and royal castle with splendid picture-gallery and gardens. Pop. (1885), including military (never less than 4,000) 16,087; (1890) 17,332; (1900) 19,436.

LUDWIGSHAFEN, lôd'vichs-hâ-fen: fortified town in Rhenish Bavaria, on the Rhine, opposite Mannheim, with which it is connected by an iron bridge. It was founded 1843 by Ludwig I. Pop. (1890) 28,768; (1900) 61,914.

LUES, n. lô ēz [L. lŭēs, pestilence in man or beast]: poison; pestilence; disease.

LUFF, n. luf [Dut. loef, a rowlock or oar-pin: OE. loof, the large oar or paddle used by way of a rudder: comp. Icel. löpp, the paw of an animal; lofi, the flat hand]: the part of a ship toward the wind; the weather-gage; the foremost edge of a fore-and-aft sail; the roundest part of a vessel's bow: V. to turn the head of a ship toward the wind. Luff'ing, imp.: N. the act of sailing a ship close to the wind. Luffed, pp. luft. Luff-tackle, a large movable tackle. To luff round, or To luff A-lee, to throw the ship's head into the wind. To spring her luff, to yield to the helm by sailing nearer the wind.

LUFFER, n. luffer: see Louvre.

LUG, n. lug [Swiss, lugg, loose, slack; luggen, to be slack: Sw. lugga, to pull one by the hair—from lug, the forelock or hanging hair in front of the head: Icel. loka, to hang or drag]: that which flaps or hangs loose; the flap or hanging portion of the ear; in Scot., the ear itself; that which projects, as an ear; a small fish; a sea-shore

LUGANO-LUGGAGE.

worm: V. to haul; to drag; to pull along by an ear, or any loose part employed as a handle. Lucano, imp. Lugged, pp. luga. Lugged, n. lugged, literally, heavy bulky articles that have to be pulled or aragged, not carried; anything cumbersome and heavy to be carried; the trunks, packages, etc., of a traveller.

LUGANO, lô-gâ'nō: town in the canton of Ticino, Switzerland, on the n.w. shore of the lake of L. It is entirely Italian in character, with dingy and dirty arcaded streets; but its environs display all the richness of Italian scenery. L. contains several factories for throwing silk, and is the seat of a flourishing transit trade between Switzerland and Italy. Monte Salvadore in the vicinity affords a magnificent view. Pop. about 7,000.

LUGA'NO, LAKE OF: in the s. of the canton of Ticino, Switzerland, three of its arms reaching into the Italian territory. Its surface is 889 ft. above sea-level, and its greatest length is about 20 m.; but from its exceedingly irregular shape, it is nowhere more than 1½ m. broad. Its scenery is as beautiful as, and more rugged than, that of Lakes Como and Maggiore. Its outlet is westward into Lago Maggiore.

LUGANSK, lo-gansk's market-town in the govt. of Ekaterinoslav, European Russia, on the Lugan, a branch of the Donctz, 100 m. n.n.w. of Taganrog. It is the seat of the only ironworks in s. Russia. The ore was formerly brought from the Ural Mountains, but is now found in the neighborhood. L. has also a cannon-foundry and coal-mines, and, during the Crimean war, supplied the Russian fleet with coal and ammunition. Pop. (1880) 10,000; (1890) 16,046.

LUGDU'NUM: see Lyons.

LUG'GAGE of Travellers, in Law: though in a certain sense attached to the person and under one's immediate care and not paid for separately, never heless protected by the contract; so that carriers of all kinds are bound to carry L. safely, and if it is lost, must pay damages The usual term for L. in the United States is Owing to the cstablished rule, that L. is not Baggage. separately paid for, travellers sometimes abuse this privilege, and carry merchandise as part of and mixed with their L. to avoid extra payment. Most railway companies, accordingly, by their by-laws fix a limit as to weight for this L., and it is presumed that L. consists only of wearing-apparel or things for personal use, and not articles intended for sale. Though carriers or railway companies cannot be rid of liability for this L. by giving any notice or making a by-law to that effect, yet it is competent for all carriers to specify certain articles of merchandise, which, whether they are mixed with L. or not, must be separately paid for, otherwise they will not be responsible. Such are gold or silver manufactured, jewelry, watches, clocks, trinkets, stamps, maps, writings,

LUGGER-LUGO.

title-deeds, paintings, pictures, glass, china, silks, furs, and lace, provided these exceed a certain value. Unless notice of such articles included in the L. is given to the carriers or company, and an increased rate paid, they will not be responsible for the loss. With this exception the carrier is bound to receive, carry securely, and deliver the L. of travellers, notwithstanding the traveller has it in his personal charge. Thus, when a railway porter, on the arrival of the train, carried a traveller's L. to a cab and lost it in the way, the railway company was held responsible. A carrier has a lien on the L. for the fare, if not paid, and can keep it till such fare is paid; but as prepayment is now the universal practice, this remedy is seldom resorted to.

LUGGER, n. lug'ger [Dut. logger: probably from lug, the sail being easily hoisted by a pull]: small vessel with two or three masts, and a lug-sail on each, and occasionally a topsail. The rigging is light and simple, and the form of the sails enables a L. to beat close up to the wind. Among English boats, the lug-rig rarely extends



Lugger.

beyond the larger class of fishing-vessels, though there are some very elegant lugger-yachts in the different clubs. In France it is a favorite rig, and is used for vessels as large as British schooners. Lugsail, quadrilateral sail used in luggers and open boats. It is bent, by the upper side, upon a straight yard, which is slung on the mast in an oblique position, one-third to windward, two-thirds on the leeward side of the mast.

LUGO, lô'gō: Italian town, province of Ravenna, 32 m. s.e. of Ferrara. Pop. 10,000.

LUGO. lô'qō: maritime province in Spain, part of old Galicia, 3,814 sq. m. L. is mountainous, and its coast of 40 m. on the Atlantic is extremely rugged. Internal communications are imperfect. Pop. (1900) 465,386.

LUGO-LUINI.

LU'GO (Lucus Augusti of the Romans): town in n.w. Spain, cap. of the province of L., on the left bank of the Miño, 50 m. e.n.e. of Santiago. It is the seat of a bishop, has a cathedral of the 12th c., and several other churches, and manufactures of silk and leather. It was noted in the time of the Romans for its warm sulphur-baths. Pop. (1894) 19,701.

LUGOS, lô'gŏsh: town in the Banat, Hungary, on the Temes. It consists of two parts, one inhabited mainly by Germans (pop. 4,000), the other by Rumanians (10,000 in number).

LUGUBRIOUS, a. lô-gū'brĭ-ŭs [L. lugūbris, mournful: It. and F. lugubre]: mournful; sorrowful; indicating sorrow. Lugu'briously, ad. -lĭ.

LUG-WORM, lug'werm, or Lob-worm, lob'werm (Arenicola piscatorum): one of the Dorsibranchiate Annelida, extremely abundant on British shores, and very valuable as bait to fishermen. It inhabits the sand, on the surface of which, after the tide has retired, innumerable coils are always to be seen, the casts of this worm. is larger than the earthworm, sometimes 12 inches long, is destitute of eyes, has no distinct head, but is much thicker at the extremity where the mouth is situated than at the other. The mouth has no jaws, nor teeth, nor tentacles. There are two rows of bristles along the sides, organs of locomotion, by means of which the L. works its way through the sand. About the middle, it has on each side six tufts of gills. (For fig., see Anne-LIDA). When touched, it exudes a yellowish fluid; and an exudation from its body slightly agglutinates the particles of sand, so as to form a tube through which it passes and repasses. It is remarkable among annelids for the red color of the blood, which imparts a fine crimson to the gill-tufts. See Annelida: Lob-worm.

LUINI, lô-ē'nē (or Lovino da Luini, lō-vē'nō dâ lôē'nē), Bernardino: leading painter of the Lombard school founded on the style of Leonardo da Vinci: b. abt. 1465, at Luini, near the Lago Maggiore; d. prob. abt. 1540. He is generally stated to have been the principal pupil of Leonardo da Vinci, but it appears rather that he was educated under Stefano Scotto; and though, from having attended the Acad. of the Fine Arts founded at Milan by Ludovico il Moro, of which Leonardo was director, he may be styled a pupil of that great artist, yet it is not proved that he received direct instruction from him. Though L. occasionally imitated the style and execution so closely as to deceive experienced judges, his general manner had a delicacy and grace sufficiently original and distinct from that of Still his works have been often attributed to the latter, to increase their value. This charming painter executed numerous works at Milan in oil and fresco. His frescoes at Lugano, Saronno, and Pavia are justly admired. His works accord with the natural sweetness of his character: all those on sacred subjects have a peculiarly religious grace as distinct from the usual ecclesiastical mode.—He had a brother, Ambrogio, who imitated his style, and his two sons also were painters.

LUISE, lô-ē'zėh, Auguste Wilhelmine Amalie, Queen of Prussia: 1776, Mar. 10—1810, July 19; b. Hanover, where her father, Duke Karl of Mecklenburg-Strelitz, was commandant. She was married to the Crown-prince of Prussia, afterward Frederick William III., 1793, Dec. 24. After his accession to the throne, she became exceedingly popular, her great beauty being united with dignity and grace of manners, and with much gentleness of character and active benevolence. popularity increased in consequence of her patriotism, energy, and resolution, mixed with sweet and patient dignity, during the period of national calamity which followed the battle of Jena, which brought Prussia absolutely at the mercy of Napoleon. She was unexpectedly taken ill, and died when on a visit to her father in Strelitz. It has been said that no queen in modern times has been so sincerely mourned. Her memory is cherished in Prussia: the Luise Foundation for education of girls was founded in honor of her, and the Order of Luise in that kingdom commemorates her.

LU'ITPRAND, or LIUT'PRAND, King of Lombardy: see Lombardy.

LUKE, lūk (Lucas): writer of the third gospel, and of the Acts of the Apostles, according to the almost unanimous testimony of the early church: said by the church Fathers to have been born at Antioch in Syria, and to have been a physician. He was probably by descent a Very little is known of him; the name occurs but three times in the New Test. (Col. iv. 14; II Tim. iv. 11; Philem. 24); and in these three passages the evangelist L. is undoubtedly referred to. Traditions concerning him are abundant and of little value; e.g., that he was a painter, that he died a martyr, that he was one of the two disciples on the road to Emmaus, that he was one of the 70 sent out by the Lord Jesus. It appears from one of the three passages above noted that he was a physician, and that he was not born a Jew (see Col. iv. 11-14). It is plainly to be inferred from Acts xvi. 10, that L. was the associate of Paul in his second evangelistic expedition A.D. 52, joining him at Troas and accompanying him into Macedonia. He is traced also as in company with Paul on his third missionary tour; and as his companion on his final journey as prisoner to Thus L. was the apostle's faithful and constant Little beyond these few facts is known. His festival is commemorated by the Rom. Cath. Church Oct. 18.

LUKE, THE GOSPEL ACCORDING TO: one of the canonical books of the New Testament; written to present a

LUKEWARM-LULLY.

narrative of the birth of the Lord Jesus and of chief events in his life, and of his death, probably for the use especially of the Greek Christian converts of whom Luke is supposed to have been one. Its sources were, doubtless, accounts personally received from Paul and other apostles (Col. iv. 10, 14; Acts xxi. 8, 17), L.'s own observation, and many documents previously written (Lk. i 1) whose materials L. used under apostolic (especially Pauline) guidance. The early testimony is practically unanimous to the authenticity of this gospel. Some who express doubt in recent years base their doubt on a theory merely. The general view as to its date has been, and is, that it was written before the destruction of Jerusalem which was completed A.D. 70. While this is probable, it cannot be positively asserted. It is certain that its date was, at the latest, not long after that event.

LUKEWARM, a. lôk'wawrm [Icel. hlæ-vedr; Low Ger. slukwarm, lukewarm: W. llug, partly, half: Manx, lieh; Gael. leth, Ir. leath, half, and warm]: only moderately warm; tepid; not zealous; cold; indifferent. Luke'-warmly, ad. -lī. Luke'warmness, n. -nĕs, a moderate heat; indifference; coldness. Note.—In popular usage loo-warm is employed for lukewarm, and agrees with the OE. lew, and Ger. lau, lukewarm; Ger. lau-warm, tepid.

LULL, v. lŭl [Norw. lulla, to sing to sleep: O.Dut. lullen, to sing in a humming voice: Ger. lallen, to sing by only repeating la, la: Serv. lyu, cry to a child while rocking it: Esthon. laul, a song: L. lallo, I sing la, la, to put a child to sleep]: to compose to sleep by pleasing sounds; to cause to rest; to compose; to cease; to quiet; to become calm: N. power or quality of soothing; a season of quiet; cessation; abatement. Lulling, imp. Lulled, pp. lŭld. Lullaby, n. lŭl'ă-bī, a song to quiet babes or set them to sleep; that which quiets. Lull-Abies, n. plu. -bīż.

LULL, RAMON: see LULLY, RAYMOND.

LULLY, lul'i, RAYMOND: 'the enlightened doctor': 1235–1315; b. Palma, in Majorca. In his youth, he led a dissolute life, and served some time as a common soldier; but a complete revulsion of feeling taking place, he withdrew to solitude, and gave himself up to ecstatic religious meditations and the study of the difficult sciences. In this fervid and enthusiastic state of mind, he formed the project of a spiritual crusade for conversion of the Mussulmans, an idea that he never afterward abandoned. In pursuance of this project, he commenced an earnest study of theology, philosophy, and the Arabic language; and, after some years, published his great work, Ars Generalis sive Magna, which has so severely tested the sagacity of commentators. This work is the development of the method of teaching known subsequently as the 'Lullian method,' a fantastic system of logic intended to afford a kind of mechanical aid to the mind in the acquisition and retention of knowledge, by a systematic arrangement of subjects and ideas. moreover expected that the force of its inferences would carry conviction to the minds of the heathen. Like all such methods, however, it gave little more than a superficial knowledge of any subject, though it was of use in leading men to perceive the necessity for an investigation of truth, the means for which were not found in the scholastie dialectics. L. subsequently published another remarkable work, Libri XII. Principiorum Philosoph. contra Averroistas, and, full of the principles which he had developed in this book, he went to Tunis, at the end of 1291, or the beginning of 1292, to argue with his opponents, face to face. He drew large crowds of attentive hearers, and held disputations with learned Mohammedans, who, however, were as anxious to convert him as he to convert them, and the result, as might have been expected, was that little impression was made by either of the parties. Finally, however, L. was thrown into prison, and condemned to banishment. After lecturing at Naples several years, he proceeded to Rome; thence to his native island of Majorca, where he labored for the eonversion of the Saracens and Jews; thence to Cyprus and Armenia, zealously exerting himself to bring. back the different schismatie parties of the oriental church to orthodoxy. In 1306-7, he again sailed for Africa, entered the city of Bugia (then the capital of a Mohammedan empire), and undertook to prove the truth of Christianity. A tumult arose, in which L. nearly lost his life. He was again thrown into prison, and treated with great severity; yet so high an opinion was entertained of his abilities, that the chief men of the place were anxious that he should embrace Mohammedanism, and promised him if he did so the highest honors. But to L., whose intellect and feelings were both enlisted in the eause of Christianity, this was impossible. After some time he was again banished from the country, and landed (after being shipwrccked) near Pisa. He subsequently went to Paris, and lectured against the principles of Averroes; he also induced the pope to establish chairs for the Arabie, Chaldee, and Hebrew languages in all eitics where the papal court resided, and also at the universities of Paris, Oxford, and Salamanca. But his missionary zeal could be satiated only by martyrdom. In 1314, he sailed once more for Africa, and proceeded to Bugia, where he threatened the people with divine judgments if they refused to abjure Mohammedanism. The inhabitants were furious, dragged him out of the city, and stoned him, inflieting such injuries that after his escape to a Genoese vessel he died on the voyage home. The Mayence (10 vols. 1721-42) ed. of his works includes several books on alchemy, whose authorship seems to have been without reason aseribed to him. See Prantl's Gesch. der Logik, and Erdmann's Gesch. der Philosophie.

LUM-LUMBER.

LUM, n. lum [Gael. laom, a blaze, a fire: W. llumon, a chimney]: in Scot., the fireplace; the chimney.

LUMACHEL, n. lô'mă-kĕl, or Lu'Machel'la, n. -kĕl'lā [It. lumachella, a little snail]: a variety of marble full of fossil shells, exhibiting beautiful iridescent colors, sometimes a deep red or orange; also called fire-marble—also Lumachello, n. lô'mă-chĕl'lō, Lu'Machel'li, n. plu. -chĕl'lī.

LUMBAGO, n. lŭm-bā'gŏ [F. lumbago—from mid. L. lumbago-from L. lumbus, the loin or haunch.-Note: ago may be only a corruption of Gr. algos, pain]: a rheumatism or rheumatic pain in the loins and small of the back. Lumbaginous, a. lum-baj'i-nus, pertaining to lumbago. Lumbar, a. lumbus, the loin]: pertaining to the loins. Lumbar region, the lower part of the trunk.—Lumbago is often recognized first by the occurrence of a sharp stabbing pain in the loins on attempting to rise from the recumbent or sitting position. It is sometimes so severe as to confine the patient to bed and in one position, from which he cannot move without intense suffering; but in milder cases he can walk, though stiffly and with pain, and usually with the body bent more or less forward. It may be distinguished from inflammation of the kidneys by the absence of the peculiar direction of the pain toward the groin, as also by the absence of the nausea and vomiting which usually accompany the disease of the kidney.

The causes are the same as those of sub-acute rheumatism generally. The disease may arise from partial exposure to cold, especially when the body is heated, and violent straining will sometimes induce it. In persons with a strong constitutional tendency to rheumatism, the slightest exciting cause will bring on an attack

of lumbago.

The treatment must vary with the intensity of the affection. In most cases, a warm bath at bedtime, followed by ten grains of Dover's powder, will speedily remove it; and as local remedies, a mixture of chloroform and soap-liniment, or the application of the heated hammer made for the purpose, will be found serviceable. (See also the treatment for Rheumatism.) Frequently the disorder completely disappears after one application of the hammer, which should be heated in a spirit-lamp to somewhere about 200°, and then be rapidly brought in contact with points of the skin over the painful parts at intervals of about half an inch. Each application leaves a red spot, but blisters seldom occur, if the operation is properly performed.

LUMBER, n. lum'ber [originally the Lombard-room, or the place where the Lombard banker and broker stowed away his pledges: comp. O.Dut. lummer, a hindrance: Dut. belemmern, to encumber, to impede]: literally, things which cause to stumble; household odds and ends, and unused or refuse furniture, confusedly thrown

LUMBER-LUMINOSITY.

together in a room called the *lumber-room*; bulky or cumbersome things thrown aside: V. to heap together in disorder; to encumber or impede the free motion of. Lum'bering, imp.: Adj. filling with lumber. Lum'bered, pp. -berd. Lumber-room, a room for the reception of useless or unneeded things.

LUMBER, v. lum'ber [prov. Sw. lomra, to resound: Icel. hljómr, a sound: Dut. rommelen, to rumble]: to move heavily and laboriously; to make a rough noise, as a heavy rolling object. Lum'bering, imp.: Adj. moving heavily: N. the motion or jolting of anything that moves heavily. Lum'bered, pp. -berd.

LUMBER, n. lum'ber [from Limber, which see]: sawn or split timber: V. in Canada and United States, to cut down timber and prepare it for market. Lum'bering, n. the act or employment of cutting down and preparing timber for market. Lum'berer, n. -ber-er, or e who fells and shapes timber; in N. Amer., a backwoodsman. Lumber-dealer, a wood-merchant. The chief centres of the lumber-trade in the United States, are Bangor (Me.), Boston, Albany, Buffalo, Cleveland, Chicago and other lake ports, Savannah (Ga.), Brunswick (Ga.), and Pensacola (Fla.).—See Timber Trees: Arboriculture.

LUMBRIC, n. lŭm'brĭk [L. lumbrīcus, a worm]: a worm. Lumbrical, a. lŭm'brĭ-kŭl, resembling a worm: N. a muscle of the fingers and toes—so named from its resembling a worm. Lumbricales, n. plu. lŭm'brĭ-kā'-lēz, in anat., four muscles of the fingers and toes resembling worms.

LUMINARY, n. lô'mǐ-nėr-ĭ [F. luminaire, a luminary—from mid. L. luminārě: Sp. and It. luminaria—from L. lumen, light]: any body or thing which gives light; one of the celestial orbs; any one who enlightens or instructs. Lu'minous, a. -nŭs, shining; emitting light; clear; lucid; perspicuous. Lu'minously, ad. -lī. Lu'-minousness, n. -nŭs-nĕs, or Lu'minos'ity, n. -nŏs'ĭ-tĭ, the quality of being bright or shining; clearness.—Syn. of 'luminous': bright; shining; resplendent; splendid; brilliant; lustrous; phosphorescent.

LUMINIFEROUS, a. lô'mĭ-nĭf'er-ŭs [L. lumen, light; fero, I produce]: conveying or producing light.

LUMINOS'ITY OF ORGANIC BEINGS: property of emitting light, possessed by many organisms both vegetable and animal.

Plants.—In cryptogamic plants, L. has been observed on the filaments of Schistostega osmundacea, one of the ord. of Hepaticæ; in Rhizomorpha subterranea, the ord. of Fungi (common on the walls of dark, damp mines, caverns, etc., and occasionally emitting light sufficient to admit of reading ordinary print); in certain species of Agaricus (of the same order); and in Thelaphora cærulea (also a fungus), to which decayed wood owes its phosphoric light.—An emission of light, chiefly in flashes, has been observed in the case of a few phanerogamic plants,

LUMINOSITY.

among which may be mentioned the garden nasturtium and marigold, the orange lily, and the poppy. In these instances, the light has been emitted by the flowers; but cases are recorded in which the leaves, juice, etc., of certain plants have evolved light. The emission of light from the common potato, when in a state of decomposition, is sometimes very striking. Dr. Phipson, in his work On Phosphorescence, mentions a case in which the light thus emitted from a cellarful of these vegetables was so strong as to lead an officer on guard at Strasburg to believe that the barracks were on fire. The phosphorescence in this case is probably due to the same cause as that of decayed wood.

Animal substances.—Dead animal matter frequently emits light. The bodies of many marine animals shine after death, but in none is the phenomenon so vivid or continuous as in the well-known boring mollusk the The L. of this animal after death was known to Pliny, who said that it shone in the mouths of persons who ate it; and it has been made the subject of special investigation by Réaumur, Beccaria, and others. Among other results, they found that a single *Pholas* rendered seven ounces of milk so luminous that the faces of persons might be distinguished by it; and that, by placing the dead animal in honey, its property of emitting light, when plunged into warm water, lasted more than a year. It is well known that certain kinds of dead fish, especially mackerels and herrings, shine in the dark. From a careful study of the body of a dead stock-fish in a luminous condition, Dr. Phipson finds that the phenomenon is due to a grease which shines upon the fish, and which (as it contains neither phosphorus nor minute fungi, by which the light might have been caused) contains some peculiar organic matter, which shines in the dark like phosphorus itself.—Several cases are on record in which ordinary butcher's meat has presented the phenomenon of L., but the occurrence is rare. Phosphorescent light is frequently observed on the dead human body by persons who visit dissecting-rooms by night.

Living Animals.—These having L. are extremely numerous: decided cases of phosphorescence have been frequently observed, according to Dr. Phipson, 'in infusoria, rhizopoda, polyps, echinoderms, annelides, medusæ, tunicata, mollusks, crustaceans, myriapodes, and insects.' Among rhizopoda, the Noctiluca miliaris, a minute animal very common in the English Channel, is pre-eminent for L. Dr. Phipson relates that he has found it 'in such prodigious numbers in the damp sand at Ostend, that on raising a handful of it, it appeared like so much molten lava.' It is the chief cause of the phosphorescence of the sea, often observed. Among the annelides, earthworms occasionally evolve a light like that of iron at white heat. Among the tunicata, a minute animal common in some of the tropical seas. the Pyrosoma

Atlantica, resembles a minute cylinder of glowing phosphorus, and sometimes occurs in such numbers, that the ocean appears like an enormous layer of molten lava or shining phosphorus. Among the myriapodes, certain centipedes—viz., Scolopendra electrica and S. phosphorea—presenta brilliant phosphoric appearance. There is reason to believe that the former will not shine in the dark, unless it has been previously exposed to the solar rays. L. in insects occurs in certain genera of the Coleoptera and Hemiptera, possibly in certain Lepidoptera and Orthoptera. Among the Coleoptera, must be mentioned especially the genus Lampyris, to which the various species of Glowworms (q.v.) belong, and the genus Elater, to which the Fireflies (q.v.) belong. In the Hemiptera, there is the genus Fulgora, or Lantern-flies (q.v.), some species of which are highly luminous.

The evolution of light from animals belonging to the vertebrates is extremely rare. Bartholin, in his treatise De Luce Hominum et Brutorum (1647) gives an account of an Italian lady, whom he designates as 'mulier splendens,' whose body shone with phosphoric radiations when gently rubbed with dry linen; and Dr. Kane, in his last voyage to the polar regions, witnessed almost as remarkable a case of human phosphorescence. A few cases are recorded by Sir H. Marsh, Prof. Donovan, and other undoubted authorities, in which the human body, shortly before death, has presented a pale luminous ap-

pearance.

Satisfactory explanation of the above facts is difficult. The light evolved from fungi is probably connected with chemical action, while that emitted in sparks and flashes from flowers is probably electrical. In some luminous animals, a phosphorescent organ, specially adapted for the production of light, has been already detected, and as anatomical science progresses, the same will probably be found in all organisms endowed with luminous or phosphorescent properties. For full details, see Dr. Phipson On Phosphorescence (1862), and the Reports and Narrative of the Challenger Expedition.

LUMMOX, n. lum'oks [perhaps connected with lump]: colloq., a fat, unwieldy, stupid person.

LUMP, n. lümp [Norw. lump, a thick piece: Icel. klumbr; Dan. klump, a lump: Dut. lompe; Ger. lumpen, a rag, a lump]: a small mass of solid matter having no definite shape; the whole taken together; a cluster: V. to throw into a mass; to take in the gross without the distinction of particulars. Lump'ing, imp.: Add. large; heavy; great. Lumped, pp. lümpt: Add. thrown into a mass or sum. Lumpers, n. plu. lümp'erz, laborers employed by merchant-ships to load and unload. Lumpen, n. lümp'en, a long fish of a greenish color, and marked with lines. Lump'ish, a. -ish, heavy; like a lump; gross; inactive. Lump'ishly, ad. -lī. Lump'ishness, n. -nēs, state of being lumpish. Lumpy, a. lümp'ī, full of lumps. Lump'iness, n. -nēs, state of being full of

LUMPSUCKER.

rumps. Lumps, n. plu. lumps, a kind of bricks or tiles; dockyard barges. Lumpfish (see Lumpsucker). Lumpsugar, loaf-sugar broken into pieces.

LUMP'SUCKER, or Lump'fish (*Cyclopterus*): genus of fishes of family *Discoboli* (q.v.), having the head and body deep, thick, and short, the back with an elevated ridge, the fins rather small, and the ventrals united by a membrane so as to form a sucking disk.—The L. is found on the American and European coasts of the n. Atlantic, but more numerously in the seas of more northern regions. It has a grotesque and clumsy form, but its col-



Lumpsucker (C. lumpus).

ors are very fine, combining various shades of blue, purple, and rich orange. It attains a considerable size, sometimes weighing seven pounds. The L. preys on smaller fishes. Its sucker is so powerful that a pail containing some gallons of water has been lifted when a L. contained in it was taken by the tail. Its flesh is insipid at some seasons, but of fine flavor at others, and is much used for food in some northern regions. It is known in Scotland as the Cock Paidle.

LUNACY, n. lô'nă-sĩ [L. luna, the moon: F. lunatique, lunatic—from L. lunaticus, affected by changes of the moon, mad: It. lunatico, a madman]: mental derangement, formerly supposed to be dependent upon the moon's changes; insanity; madness in general (see Lunacy, in Law). Lunatic, n. lô'nă-tĩk, one affected with lunacy; an insane or mad person: Adj. mad; insane. Lunatic asylum, house specially built or set apart for the insane (see below).—Syn. of 'lunacy': madness; derangement; craziness; mania.

LU'NACY, in Law: involving question of fact as to its existence and extent; therefore requiring proof. presumption is in favor of a man's sanity, even though he be born deaf, dumb, and blind; and if insanity is disputed, it always lies on the party alleging it to prove it. Sometimes a person in a state supposed to be that of a lunatic makes a contract, and is sued upon it; in such a case, he may set up as a defense that he was a lunatic, and the proof will consist of his conduct and actions at and previous to the time in question. If, however, the other party did not know of the L., and took no advantage, the lunatic will not be allowed to recover moneys paid by him in pursuance of his contract. Though the presumption is in favor of the sanity of a person, yet, when once insanity has existed, the presumption is reversed, and then the law presumes no lucid interval or restoration to sanity until it is proved; and it is extremely difficult to prove a lucid interval, for the law requires very clear and conclusive proof of that fact, and all the circumstances must be carefully scanned. difficult or impossible to define in words what is insanity or L., it being a negative state, and merely an inference from the acts, conduct, and bodily condition of the person. An idiot is said to be a person born with a radical infirmity of mind, and whose state is one of perpetual infirmity, incapable of cure or restoration; whereas a lunatic is one who is sometimes of good and sound mind, and sometimes not; he may have lucid intervals. and is assumed to be more or less capable of restoration to sanity. A person is said to be, in legal phraseology, of unsound mind, who is not an idiot, nor a lunatic, nor yet of a merely weak mind, but, by reason of a morbid condition of intellect, is as incapable of managing his affairs as if he were a lunatic. Though it is difficult to define L. or insanity, there are various tests more or less accepted in every-day life as strong evidence. Idiocy is accompanied by a vacant look, etc., while insanity is accompanied by some frenzy or extravagant delusion. The physiology of idocy and L. is a separate subject of investigation, and is a part of medical jurisprudence, to which a few medical men confine their attention, and their assistance is often required by courts of law when inquiring into this state of mind, though their theories are jealously scrutinized. As a general rule, an idiot or a lunatic is subject to civil incapacity. He cannot enter

LUNACY.

into contracts or transact general business, and what he does is a nullity. Thus he cannot make or revoke a will, or enter into marriage, or act as an executor or administrator, or become a bankrupt, or be a witness in a court of justice, or vote at elections, etc. general rule, a lunatic is liable in damages for committing a wrong, such as a trespass, and he is liable for necessaries supplied to him, and he may be arrested for debt, and his property may be taken in such cases, as in the case of sane persons. With regard to criminal re-sponsibility, the English judges, 1847—called on by the house of lords to state their opinion as to the right mode of putting the questions to a jury when the defense of insanity is raised—said that a person laboring under an insane delusion as to one subject is liable to punishment, if at the time of committing the crime he knew he was acting contrary to law. In general cases, to establish want of responsibility, it must be proved that the party accused was laboring under such a defect of reason, from disease of mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know that he was doing what was wrong. Where the party is laboring under an insane delusion as to existing facts, and commits a crime in consequence thereof, it depends on the nature of the delusion whether he is excused. Thus, if he insanely believes that A intended to kill him, and he kills A, as he supposes, in self-defense, he would be exempt from punishment. But if his delusion was that A had inflicted a serious injury to his character and fortune, and he killed A in revenge for such supposed injury, then he would be liable to punishment. When a person is acquitted of crime on the ground of L., he is liable to be confined.

So long as a person is not actually declared insane or an idiot, he has a right to manage his own affairs; and formerly the only way in which he could be deprived of such right, was, in England, by a writ de lunatico inquirendo, issuing out of chancery, which authorized the empanelling of a jury to decide whether he was a lunatic or not. The practice has now been considerably altered, but, as a general rule, in England and the United States it is the law, that, unless a person has been officially declared a lunatic, he is still entitled to manage his own In the United States the question rests with the courts to decide; but courts do not concern themselves with the subject of L. except as it becomes necessary for their determining the competency or the responsibility of persons for acts on which they are required to give judgment. In Scotland there is recognized an intermediate state (see Interdiction, under Interdict: Imbecility); but in the United States no such state is legally recognized; hence, if a weak person is imposed on, it is treated merely as a case of fraud, the weakness forming an element of such fraud; but there is no legal machinery for restraining the natural

LUNAR.

right, even of weak-minded persons, to do what they like

with their property.

In general, though courts may sometimes be confused in application of the principle, the principle in law is that no L. is to be recognized that does not arise from bodily disease. No mere crime can be received as proof of L.: the L. must have independent proof. Drunkenness or passionate heat cannot be accepted as excuse, as though they were mere forms of L.: the courts are to decide the existence and the extent of L. in a given case, and so fix the measure of responsibility for the act in question. For the various kinds of mental alienation, see Insanity: Imbecility.

LUNAR, a. lô'nér, or Lu'nary, a. -nér-ĭ [L. lunāris, of or belonging to the moon—from luna, the moon]: pertaining to the moon; caused or influenced by the moon. LUNARIAN, n. lô-nā'rī-ăn, an inhabitant of the moon. LUNATE, a. lô'nāt, or Lu'NATED, a. formed like a halfmoon; crescent-shaped. Luna'tion, n. -nā'shun, one revolution of the moon; a lunar month. Lunar-caus-tic [L. luna, the moon, being the old alchemical name for silver]: name for fused nitrate of silver, cast in the form of small cylinders, and used surgically. It is, when freshly prepared, of a whitish striated appearance; but on exposure to the air, the outer surface becomes decomposed, and blackens. Its uses in surgery are numerous. It is a helpful application to punctured, and especially to poisoned wounds. When applied to large indolent ulcers, it acts as a stimulant, and restores a more healthy action. It is used to remove and keep down spongy granulations (popularly known as proudflesh) in wounds and ulcers, and to destroy warts. has been applied with good effect to the pustules in small-pox, to cut short their progress and to prevent pit-It is of great service as a local application in inflammatory affections and ulcerations of the mucous membrane of the mouth and throat. In fissured or excoriated nipples, its application gives great relief. should be insinuated into all the cracks, and the nipple afterward washed with tepid milk and water. It is also extensively employed in diseases of the eye, of the genito-urinary organs, and in some forms of skin-disease. LUNAR CYCLE (see METONIC CYCLE, under METONIC). Lunar month, the time of one revolution of the moon, equal to 29 days, 13 hours, nearly. Lunar theory, term employed to denote the a priori deduction of the moon's motions from the principles of gravitation: see Moon.

LUNATIC ASYLUM.

LU'NATIC ASY'LUM: abode provided for the insane, with a view to their restraint and cure. The first hospitals for the insane of which history or tradition makes mention, were the sacred temples in Egypt. In these, it is said, the disease was mitigated by agreeable impressions received through the senses, and by a system resembling and rivalling the highest development of moral treatment now practiced. Monasteries appear to have been the representatives of such retreats in the mediæval Christian times; but restraint and rigid asceticism characterized the management. Out of conventual establishments grew the Bethlems, or Bedlams, with which our immediate ancestors were familiar (see Bed-LAM). But apart from such receptacles, the vast majority of the insane must have been neglected; in some countries, reverenced as specially stricken of God; in others, tolerated, or tormented, or laughed at, as simpletons or buffoons; in others, imprisoned as social pests, even executed as criminals. In a few spots which had reputation for sanctity, or where miraculous cures of nervous diseases were supposed to have been effected, such as Gheel and St. Suaire, communities were formed, of which lunatics, sent with a view to restoration, formed a large part: they resided in the houses of the peasants, and partook of their labor and enjoyments: see GHEEL. Asylums, properly so called, date from the commencement of the 19th c.; and for many years after their institution, though based on benevolent views, they resembled jails both in construction and in the mode in which they were conducted, rather than hospitals. Until very recently, a model erection of this kind was conceived necessarily to consist of a vast block of building, the centre of which was appropriated to the residence of the officers, the kitchen and its dependencies, the chapel, etc., from which there radiated long galleries, in which small rooms, or cells, were arranged on one or both sides of a corridor or balcony, having at one extremity public rooms, in which the agitated or non-industrial inmates, as the case might be, spent the day, while the more tractable individuals were withdrawn to engage in some pursuit, either in workshops, clustered round the central house, or in the grounds attached, which were surrounded by high walls, or by a ha-ha. The population of such establishments, when they were appropriated to paupers, ranged from 100 to 1,400 patients. These were committed to a staff composed of a medical officer, matron, and attendants, to whom were directly intrusted the management, discipline, and occupation of the insane, in accordance with regulations or prescriptions issued by the physician. gradual but great revolution has taken place in the views of psychologists as to the provisions and requirements for the insane during seclusion. As a result of this change, asylums, especially for the wealthy classes, are assimilated in their arrangements to ordinary dwellinghouses; while it is proposed to place the indigent in

cottages in the immediate vicinity of an infirmary, where acute cases, individuals dangerous to themselves or others, or in any way untrustworthy, could be confined and actively treated, as their condition might require. In all such establishments, whether now entitled to be regarded as cottage asylums or not, the semblance and much of the reality of coercion has been abolished; the influence of religion, occupation, education, recreation; the judicious application of moral impressions; and the dominion of rational kindness and discriminating discipline, have been superadded to mere medical treatment, and substituted for brutal force, terror, and cruelty.-See Insanity.—Esquirol, Des Maladies Mentales, t. ii.; Guislain, Sur l'Alienation Mentale; Browne on Asylums, etc.; Conolly on Construction of Asylums. Late statistics show 112,700 insone and imbecile persons in the United Kingdom; 108,100 in Germany; 93,000 in France; 80,000 in Russia; 44,000 in Italy; 35,000 in Austria; and 13,000 in Spain and Portugal. In the United States (1890) there were 100,254 insane and 95,571 feebleminded; total 201,825. Of the insane 53,264 were males and 52,990 females; 99,719 were white, of whom 64,419 were native and 35,300 foreign born; 6,535 were colored, of whom 3,013 were males and 3,522 females. Of the feeble-minded 52,940 were males and 42,631 females; 84,-997 were white, of whom 75,910 were native and 9,087 foreign born; 10,574 were colored, of whom 5,788 were males and 4,786 females. Of all classes there were an average of 1,697 insane and 1,526 feeble-minded in each 1,000,000 of population. Of the insane 74,028 (38,330 males and 35,698 females) were in the several asylums, public and private; native born white 43,328, foreign born white 26,401, total white 69,729; colored 4,299. Of those in hospitals 34,480 were afflicted with mania; 11,132 with melancholia, 1,416 with monomania, 1,176 with paresis, 19,889 with dementia, 1,534 with epilepsy, and 443 with dipsomania.

The insane and feeble-minded were distributed by States as follows: Ala. insane 1,469 (feeble-minded 2,187); Ariz. 59 (13); Ark. 789 (1,671); Cal. 3,594 (880); Colo. 326 (192); Conn. 2,056 (1,208); Del. 197 (220); D. C. 1,576 (261); Fla. 351 (500); Ga. 1,815 (2,191); Ida. 82 (55); Ill. 6,638 (5,249); Ind. 3,290 (5,568); Io. 3,197 (3,319); Kan. 1,793 (2,039); Ky. 2,729 (3,635); La. 910 (1,173); Me. 1,299 (1,591); Md. 1,646 (1,549); Mass. 6,103 (2,929); Mich. 3,723 (3,218); Minn. 2,204 (1,451); Miss. 1,103 (1,756); Mo. 3,417 (3,881); Mont. 187 (52); Neb. 932 (959); Nev. 175 (22); N. H. 960 (779); N. J. 3,163 (1,631); N. M. 66 (127); N. Y. 17,831 (7,337); N. C. 1,725 (3,597); N. D. 221 (135); O. 7,599 (8,034); Ok. 7 (34); Ore. 618 (283); Penn. 8,480 (8,718); R. I. 792 (488); S. C. 912 (1,805); S. D. 310 (285); Tenn. 1,845 (3,590); Tex. 1,668 (2,763); Utah 165 (183); Vt. 823 (901); Va. 2,406 (3,090); Wash. 376 (140); W. Va. 1,079 (1,430); Wiz. 2,510 (2,402); When 29 (14)

Wis. 3,510 (2,402); Wy. 38 (14).

The table which follows gives the names, locations, and inmates (1890) by sex and birth, of all the public and private insane asylums of the United States. (See IDIOCY.)

LUNATIC ASYLUM.

	LUNATIC ASYLUM.
Total.	1,01, 1,267 1,267 1,267 1,488 1,489 1,489 1,489 1,499 1,499 1,106 1,
Foreign White.	94 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Native White.	741 297 487 487 487 140 140 140 140 140 140 140 140 140 140
Females.	00041 400 000 000 000 000 000 000 000 00
Males.	1,057 1,057 1,057 1,057 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,173 1,057
Place.	Tuscaloosa. Phenix Little Rock Napa. Stockton. Agnew. Pueblo Middletown. Hartford. Cromwell Litchfield Farmhurst. Washington Chattahoochee Milledgeville Blackfort Batavia. Dunning. Jacksonville Kankakee. Elgin. Anna Jacksonville Lidgansport.
NAME OF HOSPITAL.	Alabama Insane Hospital Territorial Insane Asylum State Lunatic Asylum Napa Insane Institute Pacific Asylum State Insane Asylum """ Hospital for the Insane Cromwell Hall Spring Hill Institution """ """ """ """ """ """ """
STATE.	Ala. Ariz. Ariz. Cal Colo. Conn Del. D. C. Fila. Ga. III Ind.

INSANE ASYLUMS IN THE UNITED STATES.

LUNATIC ASYLUM.

Total.	8577 600 1 2577 868 8 115 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Foreign White.	833 833 833 833 833 833 833 833
Native White.	444185 - 88 - 4455 - 45
Females.	370 440 302 302 303 303 303 303 303 303 303 30
Males.	230 230 230 230 230 230 231 231 231 230 231 230 231 230 231 231 231 231 231 231 231 231 231 231
, Place.	Independence Mt. Pleasant Clarinda Davenport Ossawatomie Leavenworth Atchison Lakewood Lakewood Lakewood Lakewood St. Denis. St. Denis. Catonsville Rrederick Mt. Hope Boston Danvers. Winchendon Lawrence.
NAME OF HOSPITAL.	Hospital for the Insane Institution for the Insane St. Elizabeth's Female Insane Asylum St. John's Insane Asylum St. Joseph's Female Insane Asylum St. Joseph's Female Insane Asylum State Insane Asylum Maplewood Insane Asylum Private Insane Asylum Private Insane Asylum Contral Kentucky Lunatic Asylum Eastern Western Western Myestern Western Western Western Mospital Insane Asylum Conrad's Sanitarium Maryland Hospital Montevue Hospital
STATE.	Ia. Kan. Ky. Ky. Me. Ind. " " " " " " " " " " " " "

INSANE ASTLUMS IN THE UNITED STATES.-Continued.

INSANE ASYLUMS IN THE UNITED STATES.—Continued.

and the same of a	LUNATIC ASYLUM.
Total.	112 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Foreign White.	800 800 800 800 800 800 800 800 800 800
Native White.	25.05.05.05.05.05.05.05.05.05.05.05.05.05
Females.	883 111 886 455 100 100 100 100 100 100 100 100 100 1
Males.	28.65.00.00.00.00.00.00.00.00.00.00.00.00.00
PLACE.	Somerville. Northampton Brookline. Boston. Taunton. Westboro. Worcester Kalamazoo Ionia. Traverse. Dearborn. Rochester St. Peter. Meridian. Jacksoph St. Joseph St. Joseph St. Louis. """ "" "" "" "" "" "" "" "" "" "" ""
NAME OF HOSPITAL.	McLean Asylum for Insane. Northampton Lunatic Hospital. Private Asylum for Mental Diseases. Retreat for Insane. Taunton Lunatic Hospital Westboro Insane Hospital Worcester Insane Asylum. "" Hospital Worcester Insane Asylum Michigan Asylum Michigan Asylum St. Joseph's Retreat. St. Mississippi State Lunatic Asylum St. Vincent's Institution for the Insane. St. Vincent's Institution for the Insane. State Lunatic Asylum St. Wo. 3 Montana Insane Asylum Hospital for Chronic Insane. Norfolk Hospital for the Insane. Norfolk Hospital for the Insane.
STATE.	Mass

LUNATIC ASYLUM.

	Total.	### ### ### ### ### ### #### #### ######
	Foreign White.	100 24, 24, 24, 24, 24, 24, 24, 24, 24, 24,
INSANE ASYLUM IN THE UNITED STATES.—Continued.	Native White.	668 1 28 8 4 4 5 6 8 6 6 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6
	Females.	183 183 163 163 163 163 163 163 163 163 163 16
	Males.	135 159 100 100 100 100 100 100 100 10
	PLACE.	Reno Concord Merchantville Trenton Morris Plains New York Canandaigua Amityville Cilifton Woodhaven Poughkeepsie Brooklyn Flatbush St. Johnland Amityville Rochester Pleasantville Rochester Pleasantville Rochester Gentral Islip Blackwell's Island Hart's Island Utica Buffalo Hempstead Flushing
	NAME OF HOSPITAL.	Nevada State Insane Asylum New Hampshire Asylum Jones's Private Asylum State Asylum State Asylum Brigham Hall Insane Hospital Brigham Hall Insane Asylum Long Island Home London Hall Monroe County Insane Asylum New York City Asylum for the Insane """ State Lunatic Asylum """ State Lunatic Asylum "" "" State Lunatic Asylum New York City Asylum for the Insane "" "" State Lunatic Asylum Sanford Hall Browidence Retreat Sanford Hall St. Vincent's Retreat for the Insane Sanford Hall St. Vincent's Retreat for the Insane
	STATE.	N. N

	DONALIO ADILIUM.
Total.	1.14 1.15 1.15 1.15 1.15 1.15 1.15 1.15
Foreign White.	186 887 886 104 104 104 105 105 105 105 105 105 105 105 105 105
Native White.	268 2683 2684 2644 27173 265 265 265 265 265 265 265 265 265 265
Females.	4 00. 4 00. 4 00. 1 0. 1 0
Males.	80000000000000000000000000000000000000
PLACE.	Danville Buffalo Auburn Middletown Binghamton Willard Raleigh Goldsborough Morgantown Jamestown Cincinnati Columbus. Athens Dayton Cleveland Toledo Carthage Oxford Salem Clifton Heights Philadelphia Lancaster Harrisburg Philadelphia Lancaster Harrisburg Philadelphia Lancaster Harrisburg Philadelphia
NAME OF HOSPITAL.	Danville Sanitarium. Buffalo State Asylum for the Insane. New York State Asylum for Insane Criminals. State Homeopathic Asylum for the Insane. Willard. North Carolina Insane Asylum. Bastern North Carolina Insane Asylum. Western " " " " " " " " " " " " " " " " " " "
STATE.	Ä, , , , , , , , , , , , , , , , , , ,

LUNATIC ASYLUM.

	LUNATIC ASYLUM.
Total.	### ### ##############################
Foreign White.	168 205 205 205 205 205 205 205 205 205 205
Native White.	44444444444444444444444444444444444444
Females.	268 268 268 268 270 270 270 272 293 293 294 295 295 295 295 295 295 295 295 295 295
Males.	5.64 5.55 5.65 6.65 6.65 6.65 6.65 6.65
PLACE.	Warren Dixmont. Providence. Howard Columbia. Yankton Nashville. Knoxville. Rolivar. Terrell. Austin. Provo. Brattleboro. Brattleboro. Brattleboro. Brattleboro. Steilacoom. Williamsburg. Williamsburg. Warion. Steilacoom. Weston. Oshkosh. Wanwatosa. Wanwatosa. Winnebago. Lake Geneva. Hudson Mendota.
NAME OF HOSPITAL.	State Hospital for the Insane. Western Pennsylvania Hospital for the Insane. State Asylum for Incurable Insane. State Asylum for Incurable Insane. South Carolina Lunatic Asylum. Hospital for Insane. Central Hospital for the Insane. Eastern " " " " Western " " " " North Texas Hospital for the Insane. State Lunatic Asylum. Lake View Retreat. Central Lunatic Asylum. Lake View Retreat. Southwestern Lunatic Asylum. Eastern " " " " " " " " " " " " " " " " " " "
STATE.	Pa. B. I. B. I. S. C. S. D. Tenn. Vt. Wash. W. va. Wis.

INSANE ASYLUMS IN THE UNITED STATES.-Continued.

LUNAWARA—LUNDY.

LUNAWARA, lô-nâ-wâ'ra: small state of India, under British protection, in the Rewa Kanta division of Guzerat: 388 sq. m. The cap., from which the state derives its name, is 160 m. n.w. from Indore, near the Mahi River; pop. 10,000.—Pop. of state 75,000.

LUNCH, n. lunch, or Luncheon, n. lunch'un [OE. lunche, the sound of a blow: prov. F. lochon, a lump of bread taken from the loaf: lunch is closely related to lump: comp. Gael. lonach, hungry: W. llwnc, a gulp]: literally, a lump of something eatable; a light meal between breakfast and dinner. Note.—Luncheon may be explained from OE. nooning, a repast by laborers taken about noon, corrupted into noonshun, then into nunchion and nuncheon, and finally into luncheon. Skeat says that Lunch is a mere variant of lump.

LUND, lond (Londinum Gothorum): city of Gothland, in the extreme s. of Sweden, in an extensive and fertile plain 30 m. s.e. of Helsingborg. It was formerly the chief seat of the Danish power in the Scandinavian peninsula, and long the cap. of the Danish kingdom. The only notable building is the cathedral, said to be the finest church in Scandinavia: its crypt is as old as the 11th c. and is one of the largest in the world. manufactures of cloth, tobacco, and leather. L. is one of the oldest towns in Scandinavia; in 920, it was taken and plundered by a band of Vikings; it was the see of a bp. from the time of the introduction of Christianity, and from 1104 its abp. long exercised jurisdiction over all Denmark, Sweden, and Norway. L. has a university, founded 1628, which has now 30 professors and 500 students, a library of 100,000 vols. and several thousand manuscripts, an excellent zoological museum, and a botanic garden.—Pop. of L. (1891) 15,091; (1901) 16,943.

LUNDY, lun'di, Benjamin: abolitionist: 1789-1840, Oct. 22; b. Hardwich, N. J.; of Quaker parents. After a common-school education, he was apprenticed to a saddler in Wheeling, Va.; settled in St. Clairsville, O.; removed to St. Louis 1819; and to Mount Pleasant, O., 1820. In Wheeling the sight of coffles of slaves passing to the southern market had roused his sympathy and indignation; and he considered his trade chiefly as a mode of getting money with which to combat slavery through the press. At Mount Pleasant, he established the Genius of Universal Emancipation, 1821, Jan; he soon removed it to Jonesboro, Tenn., and 1824 to Baltimore as a weekly. About four years afterward he was assaulted and nearly murdered on the street by the chief slavedealer of the city, whose business he had denounced in the Genius. In 1829, William Lloyd Garrison became coeditor of the paper, but was put in prison for criminal libel in declaring the slave-traffic piratical: this ended the partnership, and the paper was removed to Washington nominally, but printed monthly wherever L. found place for its issue on his lecturing tours. In 1836 L.

LUNDY ISLE—LÜNEBURG.

began the National Enquirer in Philadelphia, and edited it a year; then removed to Lowell, Ill., where he died. L. had dauntless courage and unwavering self-sacrifice. On his great mission he travelled more than 25,000 m. (5,000 on foot), visited 19 states, also Canada and Hayti; everywhere lecturing and toiling to bring liberty to the oppressed. He favored gradual rather than instant emancipation, as the safest procedure.

LUNDY ISLE: island of Devonshire, England, in the mouth of the Bristol Channel. It is about three m. long from n. to s., and one m. broad; 1,800 acres. Its s. point is about 12 m. from Hartland Point, on the coast of Devonshire; and its n. end about 29 m. from St. Gowan's Head, in Wales. Its shores are rocky and precipitous, and approach to them is rendered dangerous by numerous insular rocks. There is only one landing-place, which is on the s. side, and near it are dangerous reefs. Near the s. end of the island is a light-house, on a height 567 ft. above the sea. The cliffs are the resort of multitudes of solan geese. Granite is the prevailing rock. Pop. about 150.

LUNDY'S LANE, lun'diz lan, Battle of: 1814, July 25, between the Americans and the British, in Canada, about 1½ m. from the falls of Niagara. Gen. Brown with an American army of 3,000 men was encamped on the Chippewa, opposite Buffalo, when he heard that the British under Gen. Drummond had crossed the Niagara at Queenston to attack the American depot of supplies at Ft. Schlosser. He at once sent Col. Winfield Scott with 1,200 men to make a demonstration against Queenston. Near sunset Scott came upon a strong force of the enemy under Gen. Riall, posted on a wooded eminence at the head of Lundy's Lane. Sending to Brown for reinforcements, Scott sent Maj. Jessup to attack the British left, while he assailed their front. Jessup was successful, capturing Riall and his staff; but Scott met with stubborn resistance. Meanwhile Brown came to the support of the Americans, and Drummond to that of the British. Under cover of darkness the Americans tried to take the British battery of 9 guns. At first repulsed, Scott, at the head of a second regiment, took the guns, turned them against the enemy, and so enabled the Americans to hold the position until the British withdrew at midnight, after three gallant attempts to recover it. Drummond was wounded; so were Brown and Scott. The Americans lost in killed and wounded, 743; the British, 878.

LUNE, n. lôn [F. lune, the moon—from L. luna, the moon: It. luna]: anything in the shape of a half-moon; a figure crescent-shaped; a geometrical figure formed of two intersecting arcs of a circle.

LÜNEBURG, lü'neh-bûreh: formerly a principality in Lower Saxony, now a dist. in the province of Hanover; 4,300 sq. m.—The people mostly are Protestants. The Elbe forms its n. boundary. Great part of the country is

LUNEBURG-LUNGWORT.

occupied by the Lüneburg Heath. See Hanover.—Pop. of dist. (1880) 401,339; (1891) 403,029.

LÜ'NEBURG: town of Hanover, province of L., on the river Ilmenau, 24 m. s.e. of Harburg by railway. It is mentioned as early as the age of Charlemagne, and was formerly an important Hanseatic town. It is surrounded with high walls and towers, and possesses many ancient buildings. The trade is considerable. Near L. is the salt-work of Sülze, opened in the 10th c., and still very productive. Near also are rich seams of lime and gypsum. At L. was the first engagement in the German war of liberation, 1813, Apr. 2. About 16 m.s.w. of the town, in the L. Heath is the Göhrde, a beautiful forest, with a royal hunting-lodge.—Pop. of L. (1890) 20,327.

LUNEL, lü-nĕl': town in s. France, dept. of Hérault, 14 m. e.n.e. of Montpellier. It has considerable trade in Muscatel wine and raisins. Near it is a cave, important for the fossil bones found in it.—Pop. abt. 8,000.

LUNETTE, n. lû-nět' [F. lunette; It. lunetta, a little moon—from L. luna; F. lune, the moon]: anything in the shape of a small moon; an opening in a cońcave ceiling for the admission of light; a semicircular window, or a space above a square window, bounded by a circular roof: a watch-glass flattened. In fortification, a small work advanced beyond the ditch of the ravelin, to supply its deficiency of saliency, and formed at the re-entering angle made by the ravelin and bastion. The lunette has one face perpendicular to the ravelin, and the other nearly perpendicular to the bastion: see Fortification.

the Vezouse. It is regularly built and unwalled. It was formerly a frequent residence of the dukes of Lorraine, whose palace is now used as a cavalry barrack. It is one of the largest cavalry stations in France. L. has manufactures of cotton and worsted goods, embroidery, and earthenware. The town has historic celebrity from the Peace of Lunéville, concluded here 1801, Feb. 9, between Germany and France, on the basis of the Peace of Campo-Formio (q.v.).—Pop. (1891) 21,542.

LUNG, n. lung, usually in the plu. Lungs, lungz [Icel. lunga; Ger. lunge; Dut. longhe, a lung: Icel. lungu, lungs: Bav. luck or lung, loose]: the organs of respiration in mammals, birds, and reptiles: see Respiration, Organs of. Lunged, a. lungd, having lungs. Lung'less, a. -les, without lungs.

LUNGE, v. lunj [F. allonger, to lengthen, to thrust]: another spelling for longe or allonge; to make a sudden pass or thrust in fencing. Lung'ing, imp. Lunged, pp.

LUNG'-PLAGUE OF CATTLE, CONTAGIOUS: see CAT-TLE-PLAGUE.

LUNGWORT, lung'wert, or Oak-Lungs (Sticta purmonaria): a lichen with a foliaceous leathery spreading

LUNIFORM-LUPERCAL.

thallus of olive-green eolor, pale brown when dry, pitted with numerous little cavities and netted, much lacerated; the shields (apothecia) marginal, reddish brown with a thick border. It grows on trunks of trees in mountainous regions, in Britain and other European eountries, sometimes almost entirely covering them with its shaggy thallus. It has been used as a remedy for pulmonary diseases. It is nutritious, and, when properly prepared, affords a light diet, eapable of being used as a substitute for Ieeland Moss; yet it is bitter enough to be used as a substitute for hops. It yields a good brown dye.—The name Lungwort is also given to a genus of phanerogamous plants (Pulmonaria), of nat. ord. Boragineæ. The common L. (P. officinalis) is frequent in parts of Europe. It has ovate leaves and purple flowers, and was formerly employed in diseases of the lungs, but seems to have been recommended chiefly by a fancied resemblance to the lungs in its spotted leaves. It is mucilaginous, and slightly emollient. It contains nitre in considerable abundanee. It is used in n. Europe as a pot-herb.

LUNIFORM, a. lô'nĭ-fawrm [L. luna, the moon; forma, shape]: moon-shaped.

LUNISOLAR, a. lô'nĭ-sō'lâr [L. luna, the moon; sol, the sun]: resulting from the united revolutions of the sun and moon. Lunisolar year, a period or eyele, eonsisting of 532 common years, at whose end the eclipses return again in the same order.

LUNT, n. lunt [Dan. and Ger. lunte, a match]: a quick-match for firing cannon.

LUNULA, n. lô'nū-lă [L. lunăla, a little moon—from luna, the moon: It. lunula: F. lunule]: a little moon; the portion of the human nail, near the root, which is whiter than the rest; one of the thinner portions of the arterial valves of the heart. Lu'nular, a. -lēr, shaped like a small ereseent. Lu'nulared, a. -lā-tēd, resembling a small creseent. Lunule, n. lô'nūl, a ereseent-like mark.

LUPERCAL, a. lô'pėr-kăl or lô-pėr'kăl: pertaining to the LU'PERCA'LIA, n. plu. -kā'lǐ-ă, or feasts of the ane. Romans in honor of an old Italian deity: N. the feast itself.—The Lupercalia was a festival among the ancient Romans, held Feb. 15, in honor of Inuus, an old deity of s. Etruria. Much obscurity involves the subject. When Rome began to seek a Grecian origin for its religious eeremonies, it is said that this god was identified with Lyeæan Pan, and his worship was introduced by Evander, the Areadian. Modern scholars place no value on such statements; though they also differ among them-The god (who has often been called Lupereus) is believed by some to have been one of the oldest pastoral deities of Italy; and eertainly his rites were of the rudest and most primitive character, and indicate a high antiquity. In early times his name was kept a strict Goats and dogs were sacrificed; afterward, the priests (called Luperci) cut up the skins of the victims,

and twisted them into thongs, with which they ran round the line of walls of the old Palatine city striking every one who came in their way (which women used to do) in hopes that the god of fertility would be propitious toward them. This running about with thongs is understood to have been intended as a symbolical purification of the land. The thongs were called Februa, the festival Februatio; hence the month February has its name, the last month in the old Roman year. The place where the festival was held was called the Lupercal, and was a cave on the w. side of the Palatine Hill. It contained a bronze image of the she-wolf that suckled Romulus: this was placed in it B.C. 296. Lupercalia were held also in other cities of Italy.

LUPIN, or Lupine, n. lô'pin [F. lupin-from L. lupinus, a kind of pulse: It. lupino], (Lupinus): genus of plants of nat. ord. Leguminosæ, sub-ord. Papilionaceæ, mostly annuals, but some of them perennial herbaceous plants, some half-shrubby; and generally having digitate leaves, with rather long stalks. The flowers are in racemes or spikes, the calyx two-lipped, the keel beaked, the filaments all united at the base. The species of L. are numerous, and natives chiefly of the countries near the Mediterranean, and of the temperate parts of N. and S. America. The White L. (L. albus), a species with white flowers, has been cultivated from time immemorial in s. Europe and parts of Asia, for the seeds, which are farinaceous, and are used as food, though, when raw, they have a strong, disagreeable, bitter taste, which is removed by steeping in water and boiling. They were a favorite kind of pulse among the ancient Greeks and Romans, and still are so in parts of s. Europe, though generally disliked by those unaccustomed to them. They are used in many countries for feeding cattle, particularly draught-oxen.—The Yellow L. (L. luteus), so called from its yellow flowers, and the EGYPTIAN WHITE L. (L. termis), which has white flowers tipped with blue, also are cultivated in s. Europe, Egypt, etc., for their seeds, similar in their qualities to those of the white lupin.—In many countries, lupins, particularly the white L., are cultivated to yield green food for cattle, and to be plowed down for manure. They grow well on poor and dry sandy soils, which by this process of green-manuring, are fitted for other crops. Many species of L. are cultivated in flower-gardens, having beautiful white, yellow, pink, or blue flowers. The flowers of some species are fragrant. L. perennis adorns sandy places from Canada to Florida with its fine blue flowers.

LUPULIN, or LUPULINE, n. lô'pū-lǐn [L. lupŭlus, the hop—dim. of L. lupus, the hop-plant]: the bitter aromatic principle of hops: see Hops.

. LUPUS, n. lô'pŭs [L. lupus, a wolf]: chronic disease of the skin, in which dull or livid tubercles are developed, which have a tendency to destroy or seriously to

affect the adjacent tissues, with or without ulceration, and commonly ending in indelible cicatrices: named 'wolf' from its destructive nature. It was formerly known as noli me tangere. The disease usually attacks the face, especially the alæ of the nose and the lips, but is sometimes met elsewhere. It is terrible, but rare.

L. commences usually with the appearance of one or two circular or oval, dull-red, somewhat translucent tubercles, about two lines in diameter. After a time, these tubercles increase in number and size, and take on new characters. They may ulcerate, constituting the variety known as Lupus exedens, in which case the ulceration may pursue a superficial or a deep course. Scabs are formed over the ulcers; and as these scabs are thrown off, the ulcer beneath is found to have increased in extent, till great destruction of the soft parts and (in the case of the nose) of the cartilages is effected. The ulcer of L. has thick red edges, and exudes a fetid, ichorous matter in considerable quantity. When they do not ulcerate, the tubercles are softer than in the previous variety, and form patches of considerable extent, the intervening skin and cellular tissue also swelling and exhibiting here and there dull-red points, summits of the imbedded tubercles. The lips become much enlarged, the nostrils closed with the swelling, the eyelids everted, and the whole face hideous. This variety is known as Lupus non exedens. The progress of L. is usually slow, and the sufferings of the patient less than might be expected, in consequence of the sensibility of the parts being diminished from the first. The disease may continue for years, or even for life, but is seldom fatal. causes are not known, but it is thought that a scrofulous habit and intemperance predispose to it. Both sexes are liable to it, but it seems most common in women. It is not contagious. The internal treatment consists in administration of cod-liver oil and of preparations iodine, especially Donovan's solution, while locally strong escharotics should be applied. The disease is, however, so serious, that whenever there is a suspicion of its presence, professional aid should be sought.

LURAY CAVE, *lū-rā'*: extensive and remarkable cavern in Page co., Va., near the Shenandoah valley railroad; 1 m. from the village of Luray, 89 m. from Hagerstown, 136 m. from Richmond; in Cave Hill, Fort Mountain, Massanutton range. It was discovered 1878, Aug. 13, by Andrew J. Campbell, in an accidental manner, while taking photographic views of the picturesque region; was opened to the public the following summer; and has since became a noted resort for tourists and scientists. The cave, or rather series of caverns, not yet wholly explored, occupies an area of about 100 acres so far as known; and while inferior in extent to the Mammoth Cave (q.v.), surpasses it in the number, richness, and weird beauty of its chambers. The display of stalactites and stalagmites under the witchery of the electric light exceeds in grandeur that of any other

known cave. The temperature is about the same as in the Mammoth Cave, 54° F.; the water, which fills many basins, but does not form running streams nor contain fish or other life, is clear, cold, and pure; and the air is refreshing, without depressing consequences. Dr. C. A. White, of the Smithsonian Institution, says that the rock out of which the cave has been excavated is a compact bluish limestone, not evenly bedded; and, considering the few fossils discovered, that this limestone stratum is of lower Silurian, probably belonging to the geological Trenton period. Concerning its antiquity, the same authority believes the Tertiary to be the most recent epoch at which it might have been formed. The entrance is a large compartment, supported by fluted columns, adorned with massive drapery in stone and glittering stalactites, and from it avenues radiate to the furthest discovered chambers, each of which is named from some striking resemblance to well-known Thus there are the Crystal Lake; the Cathedral, with its immense organ; the Bridal Chamber; the Giants' Hall, with rows of mighty columns; the Elfin Ramble, a wide plateau; Pluto's Chasm; Hovey's Hall, with grotesque statuary; Hades, a dark, unfathomed abyss; the Ball-room, with gorgeous furnishings; the Vegetable Garden; the Theatre; the Fish Market, etc. Individual wonders are the Saracen Tent; Empress Column; Fallen Column; Wet Blanket; Dragon of Luray; Muddy Lake; Broddus's Lake; the Gallery; Titania's Veil; Diana's Bath; Tara's Harp; and a petrified human skeleton, partially embedded in the rock. Special excursion trains to L. C. are run by the Penn. railroad every Thursday in June, July, Aug., and Sep., annually.

LURCH, n, lerch [It lurcio; OF. lourche; Ger. lurtsch, a game at tables]: a term used when one party gains every point before the other makes one—he is then said to be left in the lurch; a forlorn or difficult position. To LEAVE IN THE LURCH, a metaphor from the gamingtable; to leave in a difficult situation, or in a state of embarrassment.

LURCH, v. lerch [Norw. lurka, to lie in wait: Dan. lirke, to handle gently with a thievish intent: Ger. lauschen, to listen; lauscher, an eavesdropper: another and weakened spelling of Lurk]: to take away privily; to pilfer; to withdraw to one side; to lie in ambush; to lurk; to dodge; to play tricks; to defeat; to evade; to roll or pass suddenly to one side, as a ship in a heavy sea: N. the sudden roll or shifting of a vessel to one side in a heavy sea. Lurch'ing, imp. rolling or shifting suddenly to one side; lying in wait. Lurched, pp. lercht, rolled or shifted suddenly to one side, as a ship at sea. Lurcher, n. lerch'er, one who lurks or lies in wait; one who watches to pilfer; a poacher; a dog that lurks or lies in wait for game,

LURCH-LURID.

LURCH, v. lerch [mid. L. lurchare or lurcare, to devour greedily: connected perhaps with lura, the mouth of a bag]: in OE., to swallow greedily; to devour; to disappoint. Lurch'ing. imp. Lurched, pp. lercht. Note.—Perhaps connected with Lurch 2.

LURCH'ER: kind of dog, somewhat resembling a greyhound, and supposed to derive its origin from some of the old rough-haired races of greyhound crossed with the shepherd's dog. It is lower, stouter, and less elegant than the greyhound, almost rivals it in fleetness, and much excels it in scent. It is covered with rough, wiry hair, is usually of sandy red color, though sometimes black or gray, and has half-erect ears and a pendent tail. It is the British poacher's favorite dog, possessing all the qualities requisite for his purposes, in sagacity rivalling the most admired dogs, and learning to act on the least hint or sign from its master. It is detested by gamekeepers.

LURE, n. lôr [Ger. luder, a carcass, a bait for wild animals: It. ludro; F. leurre, a falconer's bait or lure]: originally, something held out to call in a hawk; anything which attracts by the hope of advantage or pleasure; an enticement: V. to attract by anything which promises advantage or pleasure; to entice or attract, as by a bait. Lur'ing, imp. enticing. Lured, pp. lôrd, attracted by the prospect of advantage or pleasure. Note.—Gael. lur, delight, pleasure, is suggested as an etymon for lure: Gael. lurach, comely; lurag, a pretty girl—see Dr. C. Mackay.

LURGAN, *lėr'gan*: thriving town of Ireland, county of Armagh, a station on the railway from Belfast to Armagh, 20 m. s.w. from Belfast. It is unusually neat and clean, and carries on manufactures of damasks and diapers. Pop. (1881) 10,135.

LURID, a. lôr'id [L. luridus, pale, wan: It. lurido]: gloomy; dismal; having the colors of a tempestuous sky; in bot., of a dingy brown.

LURK-LUSITANIAN.

LURK, v. lėrk [Norw. lurka or luska; Dan. luske, to lurk, to skulk: see Lurch 2, of which lurk seems to be a variant]: to lie hid or concealed; to lie in wait; to keep out of public view. Lurk'ing, imp.: Add. lying concealed. Lurked, pp. lėrkt. Lurker, n. lėrk'ėr, one who lurks. Lurking-place, a secret place; a hiding-place.

LUR'LEI, or Lore'Let: steep rock on the right bank of the Rhine, about 430 ft. high, a little way above St. Goar, celebrated for its echo, which is said to repeat sounds 15 times. Near it is a whirlpool, and still nearer, a rapid, called the Bank, formed by the river rushing over a number of sunken rocks—visible, however, at low water. In consequence, the navigation of the Rhine by rafts and boats is rather dangerous at this point, which circumstance, in connection with the echo, has undoubtedly given rise to the legend of the beautiful but cruel siren who dwelt in a cave of the L., and allured the passing voyagers to approach by the magic melody of her song, until she wrecked and sank them in the whirl-The legend has been a great favorite with the German poets, but none has treated it so exquisitely as Heine.

LUSATIA, $l\bar{u}$ -sā'shĭ-a (Lausitz): region in Germany, now belonging in part to Saxony and in part to Prussia. It was formerly divided into Upper and Lower L., which constituted two independent margraviates, including about 4,400 sq. m., with pop. about half a million; bounded s. by Bohemia, w. by Misnia and the Electorate of Saxony, n. by Brandenburg, and e. by Silesia. In 1319, L. was given to Bohemia, but was obtained by Matthias Corvinus 1478, and was finally transferred to Saxony 1635; but, by the Congress of Vienna, Lower L. and half of Upper L. was ceded to Prussia. The portion left to Saxony now forms the circle of Bautzen.

LUSCIOUS, a. *lŭsh'ŭs* [probably a mere corruption of delicious: Swiss, fluss, abundance: Gael. lus, a juicy plant: It. lussare, to wallow in worldly pleasure]: very sweet; grateful to the taste; sweet to excess. Lus'ciously, ad. -lī. Lus'ciousness, n. -nĕs, state or quality of being luscious; immoderately sweet.

LUSH, a. lŭsh [Swiss, fluss, abundance; Gael. lus, a juicy plant (see Luscious)]: in OE., having a dark, deep color; not of a pale and faint color; juicy: N. in slang, an intoxicating liquor. Lushy, a. lŭsh'ĭ, intoxicated.

LUSIAD, n. lô'zĭ-ăd [Lusitānĭă, Latin name for Portugal]: the great Portuguese epic poem of Camoëns on the discovery of India by Vasquez da Gama.

LUSITA'NIA: see Portugal—History.

LUSITANIAN, a. lô-sǐ-tā'nǐ-an [L. Lusitania, what now is Portugal]: of or belonging to Portugal. Lusita'-NIAN-PROVINCE, n. in zool. and geog., a marine province comprehending the shores of the Bay of Biscay, the Mediterranean, and n.w. Africa as far as Cape Juby.

LUSK-LUSTRE.

Lusita'nian-re'gion, n. in zool and geol., name given by Prof. Edward Forbes to a region extending from the countries bordering the Mediterranean, through Hungary and the Crimea, to the Caucasus. Note.—The name 'province' is given by zoologists to a division of water; 'region' and 'sub-region' to divisions of land.

LUSK, n. lüsk [Ger. lauschen, to listen, to lie in wait: Dan. luske, to skulk about: Icel. löskr, a lazy fellow: comp. Gael. leasg, lazy, idle]: in OE., a slothful, lazy fellow; a sluggard: Add. lazy: V. to doze about idly; to be lazy and sluggish. Lusk'ing, imp. Lusked, pp. lüskt. Luskish, a. lüsk'ish, somewhat inclined to lazy habits. Lusk'ishness, n. disposition to lazy habits.

LUST, n. lust [Goth. lustus, will, desire: AS. lystan, to covet, to desire: Icel. lyst, pleasure, desire: Low Ger. lusten, to desire]: longing desire; violent or irregular desire to possess or enjoy; carnal appetite: V. to desire eagerly or to long after; to have a violent longing desire after carnal pleasure; to have any depraved or irregular desires. Lust'ing, imp.: Add. laving eager desire after: N. any depraved or irregular desire; a violent desire for carnal gratification. Lust'ed, pp. Lustful, a. lust'ful, having eager desire for carnal gratification; sensual. Lust'fully, ad.-li. Lust'fulness, n.-nes, state of being lustful; libidinousness.—Syn. of 'lustful': licentious; libidinous; lecherous; fleshly; carnal; inordinate; impure; unchaste; lewd.

LUSTERING, n. lus'ter-ing: the brightening of metal in the crucible at the moment of reaching its point of purity, as in the cupellar on of silver, when the last traces of lead pass off; brightening; lightening; a polish, as black lustre for stoves.

LUSTILY, LUSTINF ': see under Lusty.

LUSTRAL, a. lustral—from L. lustralis, relating to purification—a lustro, I purify: It. lustrale]: pertaining to or used in prification. Lustralia, n. plu. lustralia, the purifyir sacrifices or feasts of the anc. Romans, held every fift year. Lustrate, v. lustrating, imp. Lustratus, purified]: to cleanse or purify. Lustrating, imp. Lustrated, pp. Lustration, n. -trā'shun [F.—L.]: the act of cleansing or purifying by water, also by fire, sulphur, or air; the application of which substances was in ancient times accompanied usually with an animal sacrifice, and with marchings round. Cities, after any great calamity, underwent lustration; fields, after sowing and before reaping; flocks, to ward off disease; armies, before a battle; children, a few days after birth. At the root of all these ceremonies was a rude acknowledgment of the fact that man is guilty of sin and needs some expiation and purification in the sight of God.—See Lustrum.

LUSTRE, n. lustre: [F. lustre: It. lustro: Dut. luister, lustre, splendor—from L. lustrātus, made bright or clear: F. lustrer, to give gloss to—from L: lustrāre, to purify]:

LUSTRE-LUTE.

brightness; splendor; fame; renown; a candlestick or gas pendant, ornamented with drops, etc.; in min., a term intended to describe the intensity and quality of the light reflected from the newly fractured surfaces of rocks and minerals, as a mineral of a splendent, shining, metallic, vitreous, or pearly lustre. Lus'Treless, a. -les, destitute of lustre. Lustrous, a. lus'trus, bright; shining; luminous. Lus'Trously, ad. -li.

LUSTRE: for Lustrum, which see.

LUSTRING, n. lustring [F. lustrine, lustring—from lustrer, to give a gloss to (see Lustre 1)]: a stout glossy kind of silk cloth.

LUSTRUM, n. lus'trum, or Lustre, n. lus'ter [L]: in anc. Rome, solemn offering made for expiation and purification by one of the censors in name of the Roman people at the conclusion of the Census (q.v.). The animals offered in sacrifice were a boar (sus), sheep (ovis), and bull (taurus), whence the offering was called Suovetaurilia. They were led round the assembled people on the Campus Martius before being sacrificed. The L. was instituted by Servius Tullius B.C. 566; performed last under Vespasian. As the census was quinquennial, the word lustrum came to mean a period of five years. See Lustral: Lustration.

LUSTY, a. lus'ti [Dan. lystig; Ger. lustig, merry, jovial: It. lesto, agile: comp. Gael. luthas, vigor, pith]: full of strength and pith; stout; vigorous; healthful; able of body; in OE., handsome; delightful; saucy; sturdy. Lus'tilly, ad. -ti-li. Lus'tiness. in. -nes, vigor of body; stoutness; robustness. Lus'tillead, n., or Lus'tihed, n. -hed [lusty, and head]: in O'''; vigor of body; also Lus'tihood, n. -hûd. Lusti ss, a. lus'ti-les, weak; languid; lifeless.—Syn. of 'lus' 'l: strong; bulky; large; corpulent; robust; fat; brawny

LUSUS NATURÆ, lô'sŭs no Arē [L. lūsus, a sport; natūræ, of nature]: a freak of rature, as a sheep with six legs or two heads; anything nunatural in an animal,

or in a vegetable production; a rebustrosity.

LUTARIOUS, a. lô-tā'rĭ-ŭs [L. lutārĭŭs—from lutum,

mud]; pertaining to or resembling mud.

LUTE, n. lôt [F. luth, a lute—from It. liuto: Ar. al ûd, a lute or harp: comp. Ger. laut, sound]: obsolete stringed musical instrument, superseded by the harp and guitar. It consisted of a table of fir; a body or belly, composed of 9 (sometimes 10) convex ribs of fir or cedar; a neck, or finger-board, of hard wood, on which were 9 (or 10) frets, stops, or divisions, marked with catgut strings; a head, or cross, on which were placed the pegs or screws that tightened or relaxed the strings in tuning; and a bridge, to which the strings were attached at one end, the other end being fastened to a piece of ivory, between the head and neck. The number of strings, originally 6. of which 5 were doubled, so as to make 11, was grad-

ually increased till they numbered 24. The performer used his left hand to press the stops, and struck the strings with his right. A peculiar description of notation, called tablature, was employed in music written The strings were represented by parallel for the lute. lines, on which were placed letters of the alphabet, referring to the frets: thus, A marked that the string was to be struck open (or without pressing any of the stops); B, that the first stop was to be pressed; C, the second, and so on: while over the letters were placed hooked marks, corresponding to the minim, crotchet, quaver, etc., to indicate time. So carelessly and inaccurately was lute-music generally written, that it is no easy matter to render it into the ordinary notation. The lute was formerly in high favor all over Europe as a chamber-instrument; and it was used in dramatic music to accompany the recitative. In the time of Handel, there was a lute in the Italian Opera in London; and there was a lutanist in the King's Chapel till the middle of last century.—For a minute account of the lute, and how to play it, see Macc's Musick's Monument (Lond. 1676). Lut'An-IST, n. player on the lute.

LUTE, n. lôt, or LUTING, n. lô'ting [OF. lut, clay, mold—from L. lutum, mud—from luere, to wash—lit., that which is washed over with water]: substance employed for effectually closing the joints of apparatus, to prevent the escape of vapor or gases, or for coating glass vessels so as to render them more capable of sustaining a high temperature, or for repairing fractures; also a coating of clay or sand applied by chemists to strengthen their retorts. For ordinary purposes, lutes made of common plastic clay or pipeclay with admixture of linseed-meal or almond-powder, or for common stills, linseed-meal and water made into a paste, are sufficient; for more delicate experiments, Fat Lute (q.v.), covered over with moistened bladder, is used. Lutes for coating glass vessels are generally composed of Stourbridge clay or Windsor loam, mixed with water; but the most simple method is to brush the glass retort over with a paste of pipcelay and water, dry it quickly, and repeat the operation till a sufficient thickness of coating is obtained. Other lutes in frequent use are Willis's lute (a paste composed of a solution of borax in boiling water, with slaked lime), various mixtures of borax and clay, of lime and white of egg, iron cement (see CEMENT), moistened bladder, paper prepared with wax and turpentine, and caoutchouc. The use of the last-named lute has become extensive on account of its flexibility, and consequent non-liability to accident. Lute, v. to coat with lute. Lu'TING, imp. Lu'TED, pp. LUTATION, n. lô-tā'shŭn, the act or method of applying lute.

LUTESTRING, n. lôt'string [It. lustrino (see Lustra and Lustring)]: kind of stout shining silk; lustring.

LUTETIA, n. lô-tē'shǐ-a: the Latin name of Paris.

LUTETIA: see PLANETOIDS.

LUTHER, lū'ther, Ger. lô'ter, Martin: greatest of the Prot. reformers of the 16th c.: 1483, Nov. 10-1546, Feb. 18; b. Eisleben, co. of Mansfeld, Thuringia; son of Hans L., a peasant slate-cutter. His mother, as Melanchthon records, was a woman of exemplary virtue (exemplar virtutum), and peculiarly esteemed in her humble life. Shortly after Martin's birth, his parents removed to Mansfeld, where their circumstances improved by in-dustry and perseverance. Their son was sent to school; and both at home and in school, his training was severe and hardening. His father sometimes whipped him, he says, 'for a mere trifle till the blood came,' and he was subjected to the scholastic rod 15 times in one day! Scholastic and parental severity was the rule in those days; but whatever may have been the character of L.'s schoolmaster at Mansfeld, there is no reason to believe that his father was a man of exceptionally stern character. While he whipped his son soundly, he also tenderly cared for him, and was in the habit of carrying him to and from school in his arms with gentle solicitude. L.'s schooling was completed at Magdeburg and Eisenach, and at the latter place he attracted the notice of a good lady of the name of Cotta, who provided him with a comfortable home during his stay there.

When he had reached his 18th year, he entered the Univ. of Erfurt, with the view of qualifying himself for the legal profession. He went through the usual studies in the classics and the schoolmen, and took his degree of Doctor of Philosophy, or Master of Arts, 1505, at the age of 21. Previous to this, a profound change of feeling had begun in him. Chancing one day to examine the Vulgate in the Univ. Library, he saw with astonishment that there were more gospels and epistles than in the lectionaries. He was arrested by the contents of his newly-found treasure: his heart was deeply touched, and he resolved to devote himself to a spiritual life. He separated himself from his friends and fellow-students, and withdrew into the Augustine convent at Erfurt.

Here he spent the next three years of his life—years of peculiar interest and significance; for it was during this time that he laid, in the study of the Bible and of Augustine, the foundation of those doctrinal convictions which were afterward to rouse and strengthen him in his struggle against the papacy. He describes very vividly the spiritual crisis through which he passed, the burden of sin which so long lay upon him, 'too heavy to be borne;' and the relief that he at length found in the clear apprehension of the 'forgiveness of sins' through the grace of Christ.

In the year 1507, L. was ordained a priest, and in the following year he removed to Wittenberg, destined to derive its chief celebrity from his name. He became a teacher in the new university, founded there by Elector Frederick of Saxony. At first, he lectured on dialectics and physics, but his heart was already given to theology,

and in 1509 he became a Bachelor of Theology, and began lecturing on the Holy Scriptures. His lectures made a great impression, and the novelty of his views began to excite attention. 'This monk,' said the rector of the university, 'will puzzle our doctors, and bring in a new doctrine.' Besides lecturing, he began to preach, and his sermons reached a wider audience, and produced a still more powerful influence. His words, as Melanchthon said, were 'born not on his lips, but in his soul,' and they moved profoundly the souls of all who heard them.

In 1510 or 11, he was sent on a mission to Rome, and he has described vividly what he saw and heard there. His devout and unquestioning reverence, for he was yet in his own subsequent view 'a most insane papist,' appears in strange conflict with his awakened thoughtfulness and the moral indignation at the abuses of the papacy which was

beginning to stir in him.

. - 4 .

On L.'s return from Rome, he was made a Doctor of the Holy Scriptures, and his career as a Reformer may be said to have commenced. The system of indulgences had reached a scandalous height. The idea that it was in the power of the church to forgive sin, had gradually grown into the notion, widely spread, that the pope could issue pardons of his own free will, which, being dispensed to the faithful, exonerated them from the consequences of their transgressions. The sale of these pardons had become an organized part of the papal system. Money was largely needed at Rome, to feed the extravagances of the papal court; and its numerous emissaries sought everywhere to raise funds by the sale of 'indulgences,' as they were called, for the sins of frail humanity: the principal of these was John Tetzel, Dominican friar, who had established himself at Jüterboch, on the borders of Saxony. L.'s indignation at the shameless traffic which this man carried on finally became irrepressible: 'God willing,' he exclaimed, 'I will beat a hole in his drum.' He drew out 95 theses on the doctrine of indulgences, which he nailed up on the gate of the church at Wittenberg, and which he offered to maintain in the university against all impugners. The general purport of these theses was to deny to the pope all right to forgive sins: 'If the sinner was truly contrite, he received complete forgiveness. The pope's absolution had no value in and for itself.'

This sudden and bold step of L. was all that was necessary to awaken a widespread excitement. The news of it spread rapidly far and wide. It seemed 'as if angels had carried it to the ears of all men.' Tetzel was forced to retreat from the borders of Saxony to Frankfort-on-the-Oder, where he drew out and published a set of counter-theses, and publicly committed those of L. to the flames. The students at Wittenberg retaliated by burning Tetzel's theses. The elector refused to interfere, and the excitement increased as new combatants—

Hochstratten, Prierias, and Eck—entered the field. Eck was an able man, and an old friend of L.'s, and the argument between him and the Reformer was especially vehement.

At first, the pope, Leo. X., took little heed of the disturbance; he is reported even to have said when he heard of it, that 'Friar Martin was a man of genius, and that he did not wish to have him molested.' Some of the cardinals, however, saw the real character of the movement, which gradually assumed a seriousness evident even to the pope; and L. received summons to appear at Rome, and answer for his theses. Once again in Rome, it is unlikely he would ever have been allowed to return. His university and the elector interfered, and a legate was sent to Germany to hear and determine the case. Cardinal Cajetan, the legate, was little fitted to deal with Luther. He would enter into no argument with him, but merely called upon him to retract. L. refused, and departed, in fear of capture, from Augsburg, whither he had gone to meet the papal representative. The task of negotiation was then undertaken by Miltitz, a German, and envoy of the pope to the Saxon court, and by his greater address, a temporary peace was obtained. This did not last long. The Reformer was too deeply moved to keep silent. 'God hurries and drives me,' he said; 'I am not master of myself: I wish to be quiet, and am hurried into the midst of tumults.' Dr. Eck and he held a memorable disputation at Leipzig, in which the subject of argument was no longer merely the question of indulgences, but the general power of the pope. The disputation, of course, came to no practi-cal result; each controversialist claimed the victory, and L. in the mean time made progress in freedom of opinion, and attacked the papal system as a whole more boldly. Erasmus and Hutten joined in the conflict, which waxed more loud and threatening.

In 1520, the Reformer published his famous address to the 'Christian Nobles of Germany.' This was followed in the same year by a treatise On the Babylonish Captivity of the Church. In these works, both of which circulated widely, and powerfully influenced many minds, L. took firmer and broader ground; he attacked not only the abuses of the papacy, and its pretensions to supremacy, but also the doctrinal system of the Church of Rome. 'These works,' Ranke says, 'contain the kernel of the whole Reformation.' The papal bull was issued against him; the dread document was burned Dec. 10, before an assembled multitude of doctors, students, and citizens at the Elster Gate of Wittenberg. One of the professors lighted the fire, and L. threw the papal bull on it, and a copy of the canon law was flung after it. Germany was convulsed with excitement. Eck (who had been the chief agent in obtaining the bull) fled from place to place, glad to escape with his life, and L. was everywhere the hero of the hour.

Charles V. had at this time succeeded to the empire, and he convened his first diet of the sovereigns and states at Worms. The diet met in the beginning of 1521, an order was issued for the destruction of L.'s books, and he himself was summoned to appear before the diet, a safe-conduct from the emperor being granted him for this purpose. This was above all what he desired—to confess the truth before the assembled powers of Germany. He resolved to obey the summons, come what would. All Germany was moved by his heroism; his journey resembled a triumph; the threats of enemies and the anxieties of friends alike failed to move him. 'I am resolved to enter Worms,' he said, 'though as many devils should set at me as there are tiles on the house-tops.' His appearance and demeanor before the diet, and the firmness with which he held his ground. and refused to retract, all make a striking picture. 'Unless I be convinced,' he said, 'by Scripture and reason, I neither can nor dare retract anything, for my conscience is a captive to God's word, and it is neither safe nor right to go against conscience. There I take my stand. I can do no otherwise. So help me, God. Amen.' On his return from Worms, he was seized, at the in-

stigation of his friend, the Elector of Saxony—who feared for him as in 21 days his safe-conduct would expire—and safely lodged in the old castle of the Wart-The affair was made to assume an aspect of violence, but in reality it was designed to secure him from the destruction which his conduct at Worms would certainly have provoked. He remained in this shelter about a year, concealed in the guise of a knight. chief employment was his translation of the Scriptures into his native language. He composed various treatises besides, and injured his health by sedentary habits and hard study. His imagination became morbidly excited, and he thought he saw and heard the evil one mocking him while engaged in his literary tasks. On one occasion, he hurled his inkstand at the intruder, and made him retreat. The subject of the personality and presence of Satan was a familiar one with L., and he has many things about it in his Table-talk.

The disorders which sprang up in the progress of the Reformation recalled L. to Wittenberg. He felt that his presence was necessary to restrain Carlstadt and others, and defying any dangers to which he might still be exposed, he returned to the old scene of his labors, rebuked the unruly spirits who had acquired power in his absence, and resumed with renewed energy his interrupted work. L's literary activity in these years was amazing. He is said to have published 130 treatises in 1522, and 83 in 1523. At Wittenberg he strove to arrest the excesses of the Zwickau fanatics, and counselled peace and order to the inflamed peasants, while he warned the princes and nobles of the unchristian cruelty of many of their

doings, which had driven the people to exasperation and

frenzy. At no period of his life was he greater than then in the stand which he made against lawlessness on the one hand and tyranny on the other. He vindicated his claim to be a Reformer in the highest sense by the wise and manly part which he acted in this great social crisis in the history of Germany.

His next act of importance was not so commendable. Although he had been at first united in a common cause with Erasmus, estrangement had gradually sprung up between the scholar of Rotterdam and the enthusiastic reformer of Wittenberg. This came to an open breach 1525, when Erasmus published his treatise De Libero Arbitrio. L. immediately followed with his countertreatise, De Servo Arbitrio. The controversy raged loudly

treatise, De Servo Arbitrio. The controversy raged loudly between them; and in the vehemence of his hostility to the doctrine of Erasmus, L. was led into various very questionable assertions, besides indulging in wild abuse of his opponent's character. The quarrel was an unhappy one on both sides; and it must be confessed there is especially a lack of generosity in the manner in which L. continued to cherish the dislike which sprang out of it.

In the same year, L. married Katharina von Bora, one of nine nuns, who, under the influence of his teaching, had emancipated themselves from their religious vows. The step rejoiced his enemies, and even alarmed some of his friends like Melanchthon; but it greatly contributed to his happiness, while it served to enrich and strengthen his character. All the most interesting and touching glimpses which we get of him henceforth are in connec-

tion with his wife and children.

Two years after his marriage, he fell into a dangerous sickness and depression of spirits, from which he was aroused only by the dangers besetting Christendom from the advance of the Turks. Two years later, 1529, he engaged in his famous conference at Marburg with Zwingli and other Swiss divines. In this conference, he obstinately maintained his peculiar views as to the sacrament of the Lord's Supper (q.v.: see also Impana-TION); and as in the controversy with Erasmus, distinguished himself more by the inflexible dogmatism of his opinions, than by the candor and comprehensiveness of his arguments, or the fairness and generosity of his temper. Aggressive and reforming in the first stage of his life, and while he was dealing with practical abuses, he was yet in many respects essentially conservative in his intellectual character, and he shut his mind pertinaciously after middle life to any advance in doctrinal opinion. The following year found him at Coburg, while the diet sat at Augsburg. It was deemed prudent to intrust the interests of the Prot. cause to Melanchthon, who attended the diet, but L. removed to Coburg, to be conveniently at hand for consultation. The establishment of the Prot. creed at Augsburg marks the culmination of the German Reformation; and the life of

L. thereafter through 16 years possesses comparatively little interest. He d. at Eisleben, the place of his birth; his last breath a prayer of humble faith, and a confes-

sion of Christ as his Savior.

L.'s character presents an imposing combination of great qualities. Endowed with broad human sympathies, massive energy, manly and affectionate simplicity, and rich, though sometimes coarse humor, he was at the same time a spiritual genius. His intuitions of divine truth were bold, vivid, and penetrating, though not always comprehensive; and he possessed the art which God alone gives, of kindling other souls with the fire of his own convictions, and awakening them to a higher consciousness of duty. He was a leader of men, therefore, and a Reformer in the highest sense. His powers were fitted to his appointed task: it was a task of titanic magnitude; and he was a Titan in intellectual robustness and moral strength and courage. He recognized himself as accomplishing what he did only through

the Divine energy which swayed and used him.

Reckoned as a mere theologian, there are others who take higher rank. There is a lack of patient thoughtfulness and philosophical temper in his doctrinal discussions; but the absence of these qualities gave wings to his bold, sometimes crude conceptions, and enabled him to triumph in the struggle for life or death in which he was engaged. To initiate the religious movement which was destined to renew the face of Europe, and give a nobler and more enduring life to the Saxon nations, required a gigantic will, which, instead of being crushed by opposition, or frightened by hatred, should only gather strength from the fierceness of the conflict before To clear the air thoroughly, as he himself said, thunder and lightning are necessary; and he was well content to represent these agencies in the great work of Reformation in the 16th c. On the whole, history presents few greater characters—few that excite at once more love and admiration; few in which tenderness, humor, and a certain picturesque grace and poetic sensibility more happily combine with a lofty, sometimes rugged sublimity.

L.'s works are very voluminous, partly in Latin, partly in German. Among those of more general interest are Table-talk, Letters, and Sermons. De Wette has given to the public a copious and valuable edition of his Letters, which, with his Table-talk, are the chief authority for his life. See also lives of him by Melanchthon, Michelet, and Audin. The fourth centenary of Luther's birth was celebrated in Germany, and indeed through-

out Prot. Christendom, 1883.

LUTHERAN, a. $l\bar{u}'th\dot{e}r$ - $\bar{a}n$: pertaining to Luther or his doctrines: N. a follower or disciple of Luther. Lutheranism, n. -izm, the doctrines of Luther.

LU'THERAN CHURCH, EVANGELICAL: principal Protestant communion in n. Europe; first transplanted to the United States by a Dutch colony to New York. 1623; followed by Swedes settling on the Delaware at Wilmington, 1638, who afterward joined the Prot. Episc. Church, to whom the 'Old Swedes' Church, there now belongs, as does also the one in Philadelphia. The first German Lutherans came about the same time to New York, though not in considerable numbers till 1683, nor did they then have a pastor or congregation of their own. The first German L. C. organized in the United States was at Falckner's Swamp, now New Hanover, Penn., where the Rev. Justus Falckner was first pastor, about 1703. From that time the German immigration increased very rapidly. In 1710, 4,000 driven from the Palatinate by persecution arrived in New York, and settled in N. Y., Penn., and N. C.; 1734, a large colony went to Ga. Gradually, however, Penn., with its liberal govt., absorbed the great bulk of the increasing immigration, so that by 1750 there were in that state about 60,000 Lutherans, while others were scattered through every state from Me. to Ga. There was, however, little or no vital or organic union between these or between them and the L. C. in Europe, until Dr. Henry Melchior Muhlenberg was sent from Halle, by Franke, at the urgent joint request of the three congregations at Philadelphia, Falckner's Swamp, and The Trappe, now New Providence, Penn. He arrived at Philadelphia, via Charleston, S. C., 1742, Nov. 25, and soon brought order out of confusion, union out of discord, and affected regular church organizations and discipline where before indifference, strife, and lawlessness had prevailed. The basis of union on which he everywhere insisted was the Augsburg Confession, the authorized confession of faith of the L. C. everywhere since 1530. It hinges on the doctrines of the supremacy of the Bible and justification by faith alone; insists on belief in the Trinity; the incarnation and death of Christ for the redemption of man; the innate sinfulness of man, the necessity of regeneration through the power of the Holy Spirit; justification not by works but by faith, imputed to man for righteousness, and bringing forth good works; declares that the ministry has been appointed to preach the Gospel and administer the sacraments, through which the Holy Spirit is given, which works in man faith and regeneration, that through baptism grace is offered, and children thereby presented to God, who receives them into His favor; that the body and blood of Christ are truly present and dispensed to the communicants in the Lord's Supper,' but their efficacy depends on the appreliension and reception by faith, on the part of the communicant, of the words of institution and the promise of God attached thereto: that there is one everlasting holy Christian Church, consisting of the congregation of true believers, and dependent for its unity, not on uniformity of

ceremonies, but on agreement concerning the doctrine of the Gospel and the sacraments; that on the last day Christ will appear in judgment, give eternal life to the godly and elect, and condemn the ungodly and devils to endless punishment. Muhlenberg also made provision for the proper ordering of the public worship, and administration of the sacraments, in accordance with the general cultus of the L. C. He formulated a common liturgy, different from that of the Swedish and based on that introduced in Germany by Luther. Its essential features are retained to this day, and consist of the Introit, with the Gloria Patri; the Confession of Sin, with the Kyrie; the Gloria in Excelsis; the Gospels and Epistles, with the Collect; the Apostles' Creed; and ending with the Lord's Prayer. At the same time the use of this or any specified ritual is not obligatory; hence considerable diversity prevails, and two main tendencies have been developed, one favoring a full liturgical service, the other rejecting all liturgical forms. Equally important with the two preceding measures for the development of the L. C. was the formation, 1748, Aug. 14 and 15, at Philadelphia, of the first Lutheran Synod in the United States. This, too, was effected chiefly by Muhlenberg, and was in accord with the general polity of the church. Its effect was to merge pastors and congregations into a joint body, of which each congregation is an organic part, and receives through lay representation a voice in the government of the church as a whole, while the decisions of the united body have binding force with each congregation and minister. The parity of the ministry is maintained, and the rights of the laity recognized. At this first meeting the first synodical ordination took place, and it was resolved to meet annually, alternating between Philadelphia and Lancaster. Muhlenberg is justly called the founder of the L. C. in America. From this time on until the revolutionary war the church grew with great rapidity. Numerous churches were built from the Delaware to beyond the Susquehanna, and not a few also in N. Y., N. J., Md., and Va. At Ebenezer, Ga., an orphan asylum was founded 1749. At Philadelphia Dr. Kunze opened a private school for higher education 1773; but the war put an end to it, and caused a general decadence of religious activity throughout the country. 1786 the N. Y. Synod was formed; 1803 the Synod of N. C.; 1817 the Synod of O.; 1820 the Synod of Md. and Va. The first distinctively Lutheran theological school was founded at Hartwick, N. Y., 1816, though Franklin College, at Lancaster, Penn., founded by the state 1787, was also Lutheran. By the beginning of the 19th c. the English-speaking members of the church had become numerous enough to claim recognition. They demanded in many places to have at least part of the services in the English language, which the Germans usually strenuously opposed; hence not a little dissension. 1809, the first, and for a long time the only, Lutheran church where the services

were exclusively English, was built. The Penn. Synod proposed the formation of a General Synod for the greater unification of the L. C. in America; and three-fourths of the existing synods having agreed to it, the plan was consummated at Hagerstown, Md., 1820, Oct. 22, when representatives of the synods of N. Y., Penn., N. C., and Md. met and adopted a constitution, which was ratified, 1821, by all of these synods separately, except that of N. Y. Before the second meeting of the General Synod, the Synod of Penn. withdrew from it, yielding to the fear of undue centralization of authority and infringement on individual liberty. This led to the disruption of the Penn. Synod by the formation of the West Penn. Synod, comprising all the state w. of the Susquehanna, which joined the General Synod. 1826, the latter founded the Theol. Seminary of the General Synod at Gettysburg, and soon afterward Pennsylvania College at the same place, besides showing remarkable activity in the way of publications, educational associations, 'mite societies,' mission-work domestic and foreign, and Sunday schools. In 1853 the Old Synod of Penn. came into the General Synod, as that of N. Y. had done 1837; that of the West, 1840; that of East O., 1841; that of East Penn., which had separated from the Old in 1842, though occupying the same territory, on account of the demand for English preaching, joined in 1843; as did the Allegheny and s.w. Va.; the Miami, 1845; Ill. and Wittenberg, 1848; Olive Branch, 1850; the Texas, the N. Ill., and the Pittsburg, 1853; the Ky., the Central Penn., and English District of O., 1855; the N. Ind., the S. Ill., and the English Iowa, 1857; the Melanchthon, 1859. In 1860 the General Synod embraced 26 synods, 864 minise ters, and 164,000 communicants, being two-thirds of the C. in America. The civil war caused the withdrawal of all s. of the Potomac, with their 125 ministers and 21,098 communicants. The most serious defection, however, occurred in 1866, when a separation on questions largely doctrinal took place, and deferred indefinitely all hope of a general organic union of the L. C. in this country. The separation grew out of the action of the General Synod in the reception of the Franckean Synod. Reception was granted simply with the understanding that the synod should formally adopt the Augsburg Confession at its next meeting. The delegates of the Penn. Synod protested, and withdrew from the convention. In consequence of parliamentary ruling as to the rights of its delegates to the next convention, the synod sundered its connection with the body, being followed by those of N. Y. and Pittsburg (a schism resulting in both these, however), by the English O., the Minn., the Texas, and the Ill., the last likewise being disrupted. Since then several new synods have arisen in the west, and joined the General Synod; so that the latter aggregates (1896) 25 synods, 1,137 ministers, 1,538 congregations, and 188,367 communicants. In 1866, Dec., the synods that had just withdrawn from the General Synod, besides a number of others that had never belonged, met

at Reading, Penn., and took measures for the organization of 'The General Council of the Evangelical Lutheran Church in America.' 1867, Nov. 20, this organization was consummated at a meeting at Fort Wayne, Ind., 12 synods being represented. The great distinctive characteristic of the council was its adherence to the strict letter of the Augsburg Confession as essential to church membership, over against the more liberal attitude of the General Synod. Its supreme interest is the preservation of pure Lutheran doctrine and the development of a sound Lutheran cultus and practice. The seminary at Philadelphia is its theological school. There belong to it (1896) 8 synods, 1,089 ministers, 1,830 congregations, and 317,740 communicants. A third great general organization in the L. C. is the Synodical Conference, formed at Milwaukee, Wis., 1872, July, by a union of the synods of O., Mo., Wis., Minn., Ill., and the Norwegian Synod. Doctrinal controversies that had been going on between separate synods before the union, soon reappeared afterward. chief difference was on the doctrine of predestination and conversion, the Mo. Synod heading the ultra-Lutheran side, and denouncing the others, headed by the O. Synod, as synergistic; while the latter accused the former of Calvinism. As the result of this controversy, the O. and Norwegian synods withdrew from the conference. The Synodical Conference includes (1896) 5 synods, 1,710 ministers, 2,553 congregations, and 449,450 communicants. The leading body of the Synodical Conference is the Missouri Synod, with (1896) 1,387 ministers, 2,026 congregations, and 387,-500 members, with its principal theological seminary at St. Louis, Mo. Besides the 3 general bodies mentioned above, the synods s. of the Potomac are organized into the United Synod of the South, numbering (1896) 204 ministers, 429 congregations, and 40,569 communicants. are also (1896) 13 independent synods: the Joint Synod of O. (with 403 ministers, 560 congregations, and 77,500 members), the synods of Buffalo, Norwegian L. C. (4 dist.), Hauge's (Norwegian), United Norwegian L. C. (with 345 ministers, 1,141 congregations, and 108,500 members), Iowa (German, 7 dist., with 371 ministers, 680 congregations, and 55,925 members), Danish Evang. L. C. in Amer., Danish Evang. Lutheran Assoc. in Amer., German Augsburg, Icelandic (N. W.), Immanuel, Finnish Suomi, and Slovakian. These agregate 1,646 ministers, 3,603 congregations, and 363,277 communicants; while 55 ministers and 120 congregations, with 18,000 communicants. have no connection with any synods. The total numerical strength of the L. C. in America (1896) is therefore 5,786 ministers, 9,961 congregations, and 1,359,403 communicants; so that numerically the L. C. ranks fifth among the evangelical churches of this country. In educational activity the L. C. ranks high, having (1896) 122 institutions, with 679 professors and instructors, and 12,000 students, including 26 theological seminaries with 1,226 students. There are 92 benevolent institutions, with 32,000 inmates, and property valued at \$2,643,620. The periodical litera-

LUTHERANS.

ture of the church embraces (1896) 54 publications in the Euglish language, 50 in the German, 18 in the Norwegian, 15 in the Swedish, 6 in the Danish, 4 in the Finnish, 2 in the Hungarian, and 1 in the Icelandic. The total membership of the L. C. in the world is reported at 41,276,000, comprised in 36,000 congregations, with 25,000 ministers.

See Concord, Book of: Augsburg Confession: Consubstantiation: Creeds and Confessions: Impanation: Lord's Supper: Lutherans: Real Presence: Reformation: Synergism: Transubstantiation: Suppanation.

LUTHERANS, lū'ther anz: designation applied originally by their adversaries to the Reformers of the 16th c., and afterward distinctively appropriated among Protestants themselves to those who took part with Martin Luther against the Swiss Reformers, particularly in the controversies regarding the Lord's Supper. It is so employed to this day, as the designation of one of the two great sections into which the Prot. Church was soon unhappily divided, the other being known as the Reformed (q.v.). To the end of Luther's life, harmony subsisted between him and his friend Melanchthon; but already there were some who stood forth as more Lutheran than Luther, and by whom Melanchthon was denounced as a Crypto-Calvinist and a traitor to evangelical truth (see CRYPTO-CALVINISM). After Luther's death, this party became more confident, and holding by Luther's words, without having imbibed his spirit, changed his evangelical doctrine into a dry scholasticism and lifeless orthodoxy, while extreme heat and violence against their opponents were substituted in the pulpit itself for the zealous preaching of the gospel. The principal seat of their strength was in the Univ. of Jena, founded 1557 for this very object, and which maintained their cause against Wittenberg. The utmost illiberality characterized this party; and so far as governments came under their influence, extreme intolerance was manifested, the measures adopted against those who differed from them being frequently of a persecuting nature. Few controversies have been conducted with more bitterness than the Sacramentarian Controversy (q.v.).

Toward the end of the 17th c., the Lutherans of Germany found a new subject of hostility in the *Pietists* (q.v.), against whom they stirred up the passions of the multitude, and instigated the government to severity.— In the 18th c., they came into conflict with *Rationalism* (q.v.), which may be regarded as a consequence of the state of things in Germany during the previous period of improfitable theological strife.—When, after the wars of the French Revolution were over, the Prussian government formed and carried into execution a scheme for the union of the Lutheran and Reformed churches into one national church (see Prussia), an active opposition arose on the part of those who then began to be known as *Old Lutherans*. Separate congregations were formed, and an attitude of open hostility to the government was

assumed by some; while others, more moderate, but holding the same theological opinions, continued to maintain these opinions within the United Evangelical Church. Among the latter were some of the most eminent divines in Germany, as Hengstenberg, Olshausen, Guericke, and Tholuck. The separatists were for some time severely dealt with by the government, and consequently many left their native country to found Old Lutheran communities in America and Australia. took place chiefly about 1837. After that time, greater toleration was practiced, and now the Old Lutherans form a legally recognized ecclesiastical body in Prussia. For some time after the political excitement of 1848, those who held the Lutheran doctrines within the national or United Evangelical Church of Prussia, exhibited considerable uneasiness, and a strong desire for a position more consistent with their ecclesiastical traditions; but more recently this feeling seems to have

been considerably allayed.

Lutheranism is the prevailing form of Protestantism in Saxony, Hanover, and the greater part of n. Germany, as well as in Würtemberg; it prevails to a considerable extent also in other parts of Germany. It is the national religion of Denmark, Sweden, and Norway; and there are Lutheran churches in Holland, France, Poland, etc. Among the Lutheran symbolical books, the Augsburg Confession (q.v.) holds the principal place; though the supreme authority of the Holy Scriptures is fully rec-The chief difference between the Lutherans and the Reformed is as to the real presence of Christ in the sacrament of the Supper; the Lutherans, though rejecting transubstantiation, holding a doctrine of the Lord's Supper which involves the true presence of the body and blood of Christ, not in a local or physical, but in a supernatural, spiritual, and incomprehensible man-This doctrine has been largely called the doctrine of consubstantiation by its opponents among Protestants; but that term has been expressly and officially rejected by Lutherans themselves (see LORD'S SUPPER: IMPA-NATION: TRANSUBSTANTIATION). Some of their extreme theologians have asserted not only the presence of the human nature of Christ in the Lord's Supper, as Luther did, but the absolute omnipresence of his human Other points of difference relate to the allowance of Christian worship of things indifferent (adiaphora); and many of those things at first retained as merely tolerable by Luther and his fellow-reformers, have become favorite and distinguishing characteristics of some Lutheran churches—as images and pictures in places of worship, clerical vestments, the form of exorcism in baptism, etc. Among the Old Lutherans of Prussia, particularly the separatists, a strong tendency to exaggeration in these distinctive peculiarities has manifested

In many Lutheran churches, the doctrines of Luther,

LUTHERN-LÜTZEN.

and of their symbolical books, have long given place, in a great measure, to Arminianism, and to a system of religion inconsistent with Luther's doctrine of justification by faith. In some quarters, particularly in Norway and Sweden, a reaction has of late years appeared; and many Lutheran divines of Germany are strenuous supporters of the 'evangelical' doctrines of the Reformers.

In its constitution, the Lutheran Church is generally unepiscopal, without being properly presbyterian. In Denmark and Sweden there are bishops, and in Sweden an archbishop (of Upsal), but their powers are very limited. Where Lutheranism is the national religion, the sovereign is recognized as the supreme bishop, and the church is governed by consistories appointed by him, and composed both of clergymen and of laymen. The members of congregations or marily possess almost no share in the governmental power in the Lutheran churches of Europe: in the Upsted States a more representative system has been adopted.—See Lutheran Church, Evangelical: United Evangelical Church.

LUTHERN, n. lô'thèrn [F. lucarne, a dormer-window, from L. lucer'na, a lamp]: a dormer or garret window,

LUTON, lū'ton: market-town and parish of England, county Bedford, 30 m. n.n.w. of London, on the river Lea, which rises in the parish. It is connected with the London and N.-western and the Great Northern railways by branch-lines from Leighton Buzzard to Hatfield. The staple trade is straw-hat manufacture. The parish church, an ancient and noble structure, contains an elegant, and perhaps unique, baptismal font. Pop. (1871) 17,317; (1881) 23,959; (1891) 30,005.

LU'TRA: see OTTER.

LÜTTRINGHAUSEN, *lüt'tring-how-zen*: prosperous manufacturing town of Rhenish Prussia, 18 m. s.e. from Düsseldorf. Woolen, linen, and cotton manufactures are carried on; also manufactures of hardware and cutlery. Pop. (1880) 9,649; (1885) 10,216.

LÜTZEN, lüt'sén, Battles of: two great battles near Lützen, a small town (pop. abt. 3,000) in the Prussian province of Saxony. The first was 1632, Nov. 6 (N. s. 16). Gustavus Adolphus, who had moved in the direction of Bavaria, being recalled from his designs of conquest there by the advance of Wallenstein on Saxony, united his forces with those of Duke Bernard of Saxe-Weimar, and attacked the imperialists at Lützen. The fortune of the day was very various; but notwithstanding the death of Gustavus Adolphus, victory remained with the Swedes, and Wallenstein was compelled to resign to them the field of battle. About 9,000 men were killed or severely wounded.

The Battle of L., 1813, May 2, was somewhat further s., at the village of Groszgörschen. It was the first great conflict of the united Russian and Prussian army

LUXATE-LUXEMBOURG.

with the army of Napoleon in that decisive campaign. The clies gained at first great successes, but the French were left in possession of the field at the close of the day; their superiority in numbers securing them the victory, though they lost about 12,000 men, and the allies 10,000. By this battle, the French regained possession of Saxony and the Elbe.

LUXATE, v. lŭks'āt, or Lux, v. lŭks [L. luxātus, put out of joint, loosened]: to remove from its proper place, as a joint; to put out of joint; to dislocate. Lux'ating, imp. Lux'ated, pp.: Adj. put out of joint; sprained. Luxation, n. lŭks-ā'shŭn [F.—L.]: a putting out of joint; a dislocation.

LUXURIANT, a. lŭg-zū'rĭ-ănt [L. luxu'rĭăns, or luxu'rian'tem, growing rank, increasing in size-from luxu'ria, luxury, excess]: very abundant; exuberant in growth; superfluous in abundance. Luxu'riantly, ad. Luxu'riance, n. -ri-ăns, or Luxu'riancy, n. -ănsi, strong, vigorous growth; exuberance; excessive growth. Luxuriate, v. lug-zū'ri-āt [L. luxu'riātus, indulged in luxury]: to grow to superfluous abundance; to live luxuriously; to revel without restraint in description or fancy. Luxu'riating, imp. ATED, pp. LUXU'RIA'TION, n. -shun, the act of luxuriating; the process of growing exuberantly. Luxurious, a. lug-zū'ri-us [L. luxuriōsus, abounding in luxury]: ministering to or furnished with luxuries; indulging freely or excessively in the pleasures of the table; excessive indulgence of the appetite, or in rich and expensive dress and furniture; effeminate; voluptuous; enslaved to pleasure. Luxu'Riously, ad. -li. Luxu'Riousness, n. -nĕs, state of being luxurious; voluptuousness; Luxury, n. lŭks'ū-ri, a free or excessive indulgence in rich food, dress, or furniture; anything delightful or grateful to the senses; a dainty or delicacy; any delicious food or drink; in OE., lust; lewdness; luxuriance.— SYN. of 'luxury': voluptuousness; dainty; delicacy; epicurism; effeminacy; lasciviousness; sensuality; gratification.

LUXEMBOURG, lüks-ŏng-bôr', François Henri DE MONTMORENCY, Duke of, Marshal of France: famous general of Louis XIV: 1628, Jan. 8-1695, Jan. 4; b. Paris; posthumous son of François de Montmorency, Count of Bouteville, who was beheaded on account of a duel. His aunt, mother of the Great Condé, brought him up as a companion of her son, with whom he took part in the disturbances of the Fronde, signalizing himself in the battles then fought. Being afterward received into favor by Louis XIV., he served as a volunteer under Turenne in Flanders (1667), in Franche Comté as the lieut.gen. of Condé, and in the Netherlands, where the battles of Grool, Deventer, Zwoll, etc., greatly increased his reputation. He had, however, the misfortune to embroil himself in a quarrel with the all-powerful Louvois, the results of which were disastrous to his prospects for

a time. He assumed the title of L. on marrying the heiress of that house. Some of his military exploits were very daring, and were executed with great skill; his retreat from Holland, in particular, being executed in such a masterly manner, that it placed him among the foremost generals of his age: but he largely participated in the savage burning of towns, and desolating of conquered districts, which disgracing the French arms at that period, though it is believed that in this he only carried out the positive instructions which he received from Louvois (q.v.). In the campaign of 1677, he defeated the Prince of Orange at Mont-Cassel, took St. Omer, and compelled the prince to raise the siege of Charleroi. After the Peace of Nimeguen, Louvois, as it has long been reported, attempted to accomplish his destruction by means almost incredible. Having got possession of a contract between L. and a wood-merchant. he caused it to be changed so that it became a contract with the devil. Upon this, L. was summoned before the Chambre Ardente, and obeyed the citation, though his friends advised him to leave the country. thrown into the Bastile, and there confined in a dark Rousset, Histoire de Louvois succeeds in throwing doubt on a quarrel with Louvois having occasioned this imprisonment. After 14 months, L. was acquitted and released, but banished to one of his domains, where he lived forgotten for ten years, at the end of which time, the king appointed him to the command of the army in Flanders. 1690, July 1, he gained a victory over the Prince of Waldeck at Fleurus; 1692, Aug. 4, and 1693, July 29, over William III. of England, at Steenkirk and at Neerwinden. He took Charleroi 1693, Oct. 12. L. was crooked in shape and feeble in body, but had inexhaustible activity of spirit.

LUXEMBURG, lüks'em-berg, D. lüks'em-berg: old German county, afterward a duchy, which, about the 12th c., came into possession of the Counts of Limburg, who assumed the title Counts of Luxemburg. It was next acquired by Burgundy, and in this way came into the hands of Austria. By the Peace of Campo Formio (q.v.), it was ceded to France 1797. In 1814, it was elevated to the rank of a grand duchy of the German Confederation, and given to Holland in compensation for the loss of Nassau. In 1830, when Belgium formed itself into an independent kingdom, L. was divided between it and Holland—the latter, however, retaining little more than the fortress of Luxemburg, till 1839, when, by a treaty signed in London, a new division was made more favorable to Holland.

Belgium, forming the s.e. corner of the country, contains 1,706 English sq. m.; pop. (1900) 219,210. It is traversed from s.w. to n.e. by a branch of the Ardennes Mts. which nowhere exceed 2,000 ft. in height. The surface is in general extremely rugged, much covered with woods and

LUXEMBURG-LUZ.

morasses. The soil is poor. About a third of the arable land is devoted to pasture, great numbers of cattle, sheep, and horses being reared for export. The horses are a strong, hardy breed, much prized both for agricultural and military purposes. The mineral wealth of the country consists of iron, lead, copper, marble, freestone, slate, gypsum, etc. The chief manufactures are cloth, tulle, earthen-ware, leather, nails, and potash; and the principal articles of export are hemp, flax, oak-bark, timber, iron, leather, cheese, etc. The cap. of the province Aular hear age of 1900.

ince, Arlon, has a pop. of 4,200. DUTCH L., e. of the Belgian province of L., comprises 990 Eng. sq. m.; pop. (1900) 236,543. It is connected with the Netherlands in the person of the sovereign, but has a constitution and administration of its own. The king of Holland, as grand duke, appoints a deputygovernor. Dutch L. was a part of the Germanic confederation from its formation 1815, till its dissolution 1866. In 1867, its neutrality was guaranteed by the Great Powers: see Germany. Its present constitution dates The chamber of deputies consists of 41 from 1868. members, chosen for 6 years by direct vote in the electoral districts. The inhabitants are mainly of Low German stock: Walloon is spoken on the w. border: the official language is French. The country is hilly. The chief products are wine, corn, hops, hemp, and flax. In the e. districts there are iron mines, and lime and slate quarries. The cap. is Luxemburg. The army consists of 13 officers and 500 men, besides 122 gendarmes.

LUX'EMBURG: capital of Dutch Luxemburg, on the Else or Alsette, 76 m. s. by e. from Liége, 34 m. n. of Metz. Pop. (1900) 20,928. Its situation is beautiful, and has often been compared to that of Jerusalem, being, like the latter, surrounded by escarped rocks, which, excepting the w. side, average 200 ft. in height. The Spaniards, Austrians, French, and Dutch, who successively held possession of the town, so increased and strengthened its fortifications that in the beginning of the 19th c. it was considered to be, with the exception of Gibraltar, the strongest fortress in Europe. Another portion of L., called the 'low town,' is at the foot of the precipice, along the banks of the river. L. has a fine cathedral, various handsome buildings and public institutions. has manufactures of wax, distilleries, breweries, tanneries, and an extensive general trade. It was formerly garrisoned by Prussian troops; but by the treaty of London 1867, these were withdrawn, and the fortifications demolished.

LUX'OR: see Thebes (in Egypt).

LUZ, n. luz [Heb. luz, a hazel tree, or, much more probably, the almond-tree; the bone described below]: in Rabbinical legends, an unidentified bone in the human body, destined to be the germ of the glorified body at the resurrection. According to Buxtorf it was thought to be the os coccygis, or one of the lumbar vertebræ.

LUZERN-LUZULA.

LUZERN' (plant): see Lucern.

LUZERNE, lü-zārn', Chevalier Anne César de la, Ll.d.: 1741-1791, Sep. 14; b. Paris, France: statesman. He received a military education, was aid to the Duke de Broglie in the Seven Years' war, and became maj.gen. of cav. 1762. In 1776 he was appointed French minister to Bavaria, and 1778 to the United States. He actively aided the colonial cause, personally contracted a loan for the relief of the suffering army 1780, and received the thanks of congress and of Washington, and the degree Ll.d. from Harvard College. Luzerne co., Penn., was named in his honor. At the time of his death he was French minister to Great Britain.

LUZON, Sp. lii-thon': the largest island of the Philippine archipelago, and the most northerly of the group; extreme length of the mainland, 489 m. from n.w. to s.e.; width, 138 m.; area, 43,075 sq. m., or, with its 311 dependent islands, 44,235 sq. m. The surface is mountainous, three large ranges traversing the island from n. to s., and showing volcanic formations. There are rich forests of ebony, cedar, gum trees, ironwood, and medicinal and dye trees and plants; and copper, gold asphalt, clays, coal, gypsum, iron, kaolin, lead, marble, rock salt, turpentine and zinc are found on the island. Cultivated and wild fruits of the temperate zones are grown in great abundance, the native fruits including the banana, lanzon, lemon, manga, orange, papaya, pineapple, santol, The soil is exceedingly fertile, and all the staples of the archipelago grow here in abundance. Hemp, the most valuable of the exports, is raised in great quantities in the s. provinces of Ambos, Camarines, Albay, and Sorsogon. Tobacco is the chief product of Cagayan and Isabela; and sugar is raised in all the central and s. provinces. Coffee and rice are also successfully cultivated, and all the cereals and vegetables of the United States can be raised in the mountainous regions of n. The grazing of horses, cattle, and carabaos is important in many of the provinces. Mother-of-pearl, amber, coral, and tortoise shell are exported. The coastline is very irregular, and has a number of large bays and excellent ports and harbors. There is a large internal commerce between Manila and the different islands of the group carried on almost exclusively by water. New school laws were established in 1900, modeled on the methods pursued in the United States; and at the close of that year there were 36 public schools in Manila alone. The capital of the island is Manila. Pop of L. (1899) 3,432,424.

LUZULA, $l\bar{u}'z\bar{u}-la$: genus of plants of nat. ord. Junceae; differ from rushes in having three-seeded instead of many-seeded capsule, have soft planeratedla, 4eder of a many-seeded capsule, and in having soft plane leaves, which are generally covered with thinty-scattered longish hairs. They do not grow in wet places, like rushes, but in woods, pastures, and elevated mountainous situations. The English name, Wood-Rush, has sometimes been given to the whole genus, but is appro-

LYALL-LYCANTHROPY.

priate only to some, of which it is the popular name, as L. sylvatica and L. pilosa, common British species. Field-Rush (L. campestris), a plant of very humble growth; the flowering spikes of which, congregated into a close head, their dark color relieved by the whitish yellow of the anthers, profusely adorn dry pastures in spring. It is of little agricultural value. The species which grow under the shade of trees preserve their verdure in winter, adding to the beauty of the scene, and improving the cover for game.

LYALL, lī'al, Edna (pen name of Ada Ellen Bayley): author: b. Brighton, England. Her publications, which have had a large sale in the United States and England, comprise Won by Waiting (1879); Donovan (1882); We Two (1884); In the Golden Days (1885); The Knight Errant (1885); The Autobiography of a Slander (1885); and Derrick Vaughan, Novelist, and A Hardy Norseman (1889). Her novels show a religious spirit and musical taste. She died 1903, Feb. 9.

LYART, a. $l\bar{\imath}$ - $\dot{e}rt$ [Gael. liath, gray, gray-headed]: in Scot. and OE., having gray hairs intermixed; gray.

LYCÆNA, n. lī-sē'na [Gr. lukaina, a she-wolf]: in entom., copper-butterfly, so called because a bright coppery-red prevails in the wing-coloring, the typical genus of the family Lycanidae, a family of butterflies, nearly world-wide in distribution.

LYCANTHROPY, n. li-kan'thro-pi, or LYCANTHRO'PIA [Gr. lukos, a wolf; anthropos, a man]: kind of madness in which men fancy themselves changed into wolves: belief in such a change. Ly'CANTHROPES, human beings believing themselves changed into wolves. There has been among almost all savages, and still lingers in civilized lands as a superstition, a belief that men can be transmuted into wolves by Satanic agency, and made to roam through forests and desert places, actuated by the same appetites as the wild beast whose aspect or name they bear. This may have been the origin of the insane delusion as now manifested occasionally in lunatic asylums, in which the transforming power is disease. some instances the insane conceive themselves dogs (Cynanthropia) and other animals, and even inanimate objects; but these are solitary cases, whereas the hallucination of L. has appeared epidemically, and lycan-thropes have literally herded and hunted together in packs. In 1600, multitudes were attacked with the disease in the Jura, emulated the destructive habits of the wolf, murdered and devoured children; howled, walked, or attempted progression upon all-fours, so that the palms of the hands became hard and horny; and admitted that they congregated in the mountains for a sort of cannibal or devil's Sabbath. Imprisonment, burning, scarcely sufficed to check what grew into a source of public danger. Six hundred persons were executed on their own confession. Even in the present day, cases

LYCAON—LYCHNIS.

occur in which the sufferer boasts of being a wolf, creeps like a quadruped, barks, leaps, and bites.—Calmiel, De la Folie; Arnold, On Insanity.—See Were-wolf: Totem: Witchcraft.

LYCAON, *lī-kā'ŏn*: genus of *Canidæ*, in dentition and general osteological structure nearly agreeing with dogs, but resembling hyenas in the form of the head and in having only four toes on each foot. The best ascertained species, *L. venaticus*, the Wild Dog, Hyena Dog, or Hunting Dog of the Cape of Good Hope, is rather smaller than a mastiff, and has a tall, gaunt form. It is gregarious, and still infests even the neighborhood of Cape Town, committing great depredations on flocks of sheep. It is found over great part of Africa, from the Cape of Good Hope to the valley of the Nile.

LYCAONIA, *līk-ā-ō'nī-a:* in ancient geography, province in the interior of Asia Minor, n. of Mt. Taurus; bounded e. by Cappadocia, n. by Galatia, w. by Pisidia, and s. by Isauria and Cilicia. Its boundaries varied at different times. Its cap. was Iconium (q.v.).

LYCEUM, n. $l\bar{\imath}$ -sē'ŭm [L. $lyc\bar{e}$ ŭm; Gr. lukeion, place in the immediate neighborhood of Athens, consecrated to Apollo Lyceius, noted for its shady wood and beautiful gardens, in which Aristotle and the Peripatetics taught]: apartments appropriated to instruction by lectures, etc.: on the European continent, a higher school which prepares for the university: in the United States, a literary association providing discussions, lectures, etc.

LYCH-GATE, *lich'gāt* [Aug.-Sax. *lic* or *lice*, a body, corpse], or Corpse-GATE: a churchyard gate covered with a roof; very common in many parts of England. The bodies of persons brought for burial are set down under the shelter of the roof while the service is read.

LYCHNIS, lik'nis: genus of plants of nat. ord. Caryophyllacee; having a tubular 5-toothed calyx; corolla twice as long as the calyx, with a spreading wheelshaped limb, crowned at the mouth of the tube, and generally divided at the border; ten stamens, and five The species are herbaceous plants, generally perennial, natives of temperate countries. The RAGGED Robin (L. flos-cuculi) is one of the most frequent ornaments of meadows and moist pastures; the German CATCHELY (L. viscaria), grows on almost inaccessible precipices; the RED CAMPION (L. diurna), and the White CAMPION (L. vespertina), abound in fields, hedges, and the borders of woods. The last two are diecious, and, strangely, the female of the first and the male of the second are very common, while the male of the first and female of the second are rare. The flowers of L. vespertina are usually fragrant in the evening. The Scarlet L. (L. Chalcedonica), native of Asia Minor, is a frequent and brilliant ornament of flower-borders. Some of the species have saponaceous properties.

LYCHNOSCOPE-LYCOPODIACE Æ.'

LYCHNOSCOPE, n. lik'no-skop [Gr. luchnos, a lamp, a light; skopeo, I see]: a small narrow window near the ground in the chancel of a church, so disposed that through it a person outside may see the priest at the altar during the act of consecration.

LYCIA, lish'i-a: country on the s. coast of Asia Minor, extending toward Mount Taurus, and bounded w. by Caria, n. by Phrygia and Pisidia, and e. by Pam-The most ancient inhabitants are said to have been two Semitic races, Solymi and Termilæ, the former of whom were driven from the coast to the mountains in the n. by adventurers from Crete, under command of Sarpedon, brother of Minos, who first gave the country the name of Lycia. To what race the invaders belonged, is not certain; they were not of Hellenic origin. The Lycians are prominent in the Homerie legend of the Trojan war. L. shared the vicissitudes of the other states of Asia Minor, becoming subject to the Persian and Syrian monarchies, and then to Rome. During its independence, it consisted of 23 confederate cities, of which the principal were Xanthus, Patara, Pinara, Olympus, Myra, and Tlos; and at the head of the whole confederation was a pres. or gov. called the Lyciarch. Many monuments and ruined buildings (temples, tombs, theatres, etc.), exquisite sculptures, coins, and other antiquities, testify to the attainments of the Lycians in civilization and the arts, in which they rivalled the Greeks These antiquities have been assiduously themselves. explored and studied since 1840. A beautiful collection of Lycian sculptures, made by Sir Charles Fellows, is in the British Museum. The most interesting of all the antiquities of L. are the inscriptions in which a peculiar alphabet is used, nearly allied to the Phrygian, and whose language appears to be an Indo-Germanie language mingled with Semitic words. Grotefend, Sharpe, Daniell, and others, have spent much labor in deciphering these inscriptions.

LYCOPER'DON: see PUFF-BALL.

LYCOPODIACEÆ, n. plu. lĩ/kō-pō-dĭ-ā'sē-ē [new L. lycopodium, elub-moss—from Gr. lukos, a wolf; poda, a foot]: natural order of acrogenous or cryptogamous (flowerless) plants, somewhat resembling mosses but of higher organization, and by many botanists included among ferns as a sub-order. They have ereeping stems and imbricated leaves. The axis consists entirely, or in great part, of annular vessels; the leaves are narrow and 1-nerved. The theca, or spore-cases, are axillary, sessile, 1-3-eelled, opening by valves, or not at all, and often of two kinds, one containing minute powdery matter, the other sporules much larger, eapable of germinating. powdery partieles have by some been regarded as antheridia (see Antheridium), but their nature is uncertain. —The L. are most abundant in hot humid situations, especially in tropical islands, though some are found in

LYCOTROPAL—LYCURGUS.

very cold climates. About 200 species are known.—The



two chief genera are Lycopodium and Selaginella. The common Club-moss (L. clavatum), creeps on the ground in heathy pastures, with branching stems, often many ft. long. A decoction of this plant is employed by the Poles to cure that frightful disease the plica polonica. The yellow dust or meal which issues from its spore-cases, and from those of L. Selago, is collected and used for producing the lightning of theatres, being very inflammable, and kindling with a sudden blaze when thrown upon a candle, the combustion taking place so rapidly that nothing else is liable to be kindled by it. It is called Lycopode and Vegetable Brimstone, and by the Germans, Lightning-meal and Witch-meal (Blitz-mehl and Hexen-mehl). It is used for rolling up pills, which, when coated with it, may Club Moss (Lycopo-be put into water without being mois-dium clavatum). toned It is sprinkled upon the exceptatened. It is sprinkled upon the excoria-

tions of infants, and upon parts affected with erysipelas, herpetic ulceration, etc. It is even used, although rarely, as a medicine in diseases of the urinary organs. It is the basis of most of the powders used for destroying or expelling insects: it kills them by suffocation. powder of other species is regarded in Brazil and other countries as possessing power over the urinary and generative organs. The stems and leaves of L. clavatum are emetic, those of L. Selago cathartic; a S. American species, L. catharticum, is violently purgative, and is administered in cases of elephantiasis. L. Selago is employed by the Swedes to destroy lice on swine and other animals. L. alpinum is used in Iceland for dyeing woolen cloth yellow, the cloth being simply boiled with a quantity of the plant and a few leaves of the bog whortleberry. L. complanatum is used for the same purpose in Lapland, with birch-leaves.—Many of the L. are very beautiful, and are cultivated in hothouses, greenhouses, and fern-cases, in which they grow luxuriantly. Ly'co-PODIA'CEOUS, a. -ā'shus, pertaining to the Lycopodiaceæ. Lycopodium, n. lī'kō-pō'dĭ-ŭm, a genus of moss-like plants; club-moss; its fine yellow dust or seed. Lycopodites, n. plu. li-köp'ō-dīts, fossil plants apparently allied to the club-mosses of the present day.

LYCOTROPAL, a. lī-kŏt'rō-păl [Gr. lukos, the knocker of a door; tropos, a turning]: in bot., an orthotropal ovule curved like a horse-shoe.

LYCURGUS, lī-ker'gŭs: celebrated Spartan law-giver, whose history and legislation are involved in so much obscurity, that many modern critics have suspected them to be mythical. The account usually given is as follows: L., who lived about B.C. 880 (or, according to others,

about B.C. 1100), was descended from the old Doric family of the Proclidæ. His brother, Polydectes, King of Sparta, died, leaving his widow with child. This ambitious woman proposed to L. that he should marry her, in event of which she promised to destroy the fruit of her womb. L. was shocked, but feigned consent in order to save his brother's offspring. As soon as the child, named Charilaus, was born, L. proclaimed him king, and became his guardian. At this time, Sparta is represented as being in great disorder and demoralizationthe different sections of the community quarrelling for political supremacy. L. after some years left his native country, and travelled through many foreign lands-Crete, Asia Minor, India, Egypt, Libya, Iberia-cxamining and comparing the political constitutions of the different countries, and finally returned to Sparta, full of knowledge fitting him to become one of the greatest legislators in the world. During his absence, things had grown much worse in Sparta, and he had no sooner arrived than the entire community requested him to draw up a constitution for them. To this he consented, and having induced them to solemnly swear that they would make no change in his laws till be came back, he again left Sparta, and was never more heard of. By this mysterious self-expatriation, he hoped to make the Spartan constitution eternal. The people now deemed him a god; a temple was erected in his honor, and annual sacrifices were ever afterward offered to him. No critical scholar considers such a biography historical; the most that can be assumed as probable is, that a certain L. existed, who at some critical juncture in Spartan affairs was selected to draw up a code of laws for the better government of the state. To represent the entire legislation of Sparta as invented by L., and imposed upon the people as a novelty, is incredible; the only theory worth consideration is that which supposes him to have collected, modified, improved, and enlarged the previously existing institutions of Sparta (q.v.).

LYCUR'GUS: B.c. 400-323: b. at Athens: Greek orator. He is considered the chief financier among ancient statesmen. He had repute for incorruptible integrity.

LYDFORD LAW, *lid'ford:* ancient English variety of Lynch Law (q.v.), though differing from lynch law in not dispensing with all regular legal procedure. It was named from Lydford, town in Devonshire, in whose castle were confined persons charged with violating the laws of the duchy. The dungcon was so foul and sickening, that to be imprisoned there awaiting a long deferred trial was equivalent to a summary mode of punishment.—In Scotland, a similar mode was known as Cowper law, Jedburgh justice, etc.

LYDIA, lid'i-a: anciently, country in Asia Minor, bounded w. by Ionia, s. by Caria, e. by Phrygia, and n. by Mysia. It is said to have been inhabited originally by a

people called Mæonians (whether of Semitic or Indo-Pelasgic origin is disputed by modern ethnographers), who were subdued or expelled by the Lydians (about B.C. 720), a Carian race. The country was mountainous in the s. and w.—the principal range being that of Tmolus. It was famed for fruitful soil, and mineral wealth, particularly for the gold of the river Paetolus and of the neighboring mines; but it was infamous for the corruption of morals among its inhabitants, especially in Sardis (q.v.), its eapital. L. attained its highest prosperity under the dynasty of the Mermnadæ (abt. B.C. 700-546). The first of this dynasty was the half-mythical Gyges (q.v.)—the last was the famous Cresus (q.v.), noted for prodigious wealth. The subsequent history of L. is unimportant. Its antiquities have not been adequately explored. Compare Niebuhr's Lectures on Ancient History; Hamilton's Researches, and recent investigations by Dennis, Ramsay, and Sayee.

LYDIAN, a. lid'i-an [L. Lydia; Gr. Ludia, an anc. kingdom of Asia Minor]: pertaining to Lydia or its inhabitants; soft and slow in musie; effeminate; soft. LYDIAN STONE, compact variety of flinty slate, though less hard than common flinty slate, and not of slaty structure; of velvet-black color, with a flat-conchoidal fracture and keen cutting grain; long used as a touch-stone for gold, whose purity is shown by the color of the streak left on its smoothed surface. It is found in many countries, though obtained first in Lydia.

LYD'IAN MODE: one of the ancient Greek authentic mades in music; retained as one of the old church modes, the notes being F, G, A, B, C, D, E, F, the same as in the modern diatonic scale. Since the Reformation, the melodies in the L. M. have entirely disappeared, and it is used only occasionally in modulation from other modes.

LYE, n. $l\bar{\imath}$ [F. lie, dregs: L. lix; Ger. lauge, lye-ashes: Lap. ligge, mud: Bohem. lauh, lye: Gael. lauth, ashes]: water impregnated with an alkaline salt, obtained by steeping wood-ashes in water; also spelled Ley, $l\bar{\imath}$. The term sometimes denotes all solutions of salts, but usually solutions of the fixed alkalies, potash and soda, in water. The solutions of caustic potash and soda are called caustic lyes; those of their carbonates, mild lyes. The fluid which remains after a substance has been separated from its solution by crystallization is called the Mother Lye.

LYE, n. lī [from Eng. lie, to rest]: a short railway-siding on which carriages or wagons may rest for a time.

LYELL, li'el, Sir Charles, Baronet, Ll.D., D.C.L.: eminent geologist: 1797, Nov. 14—1875, Feb. 22; b. Kinnordy, Forfarshire, Scotland; eldest son of Charles L., botanist and literary writer. L. received his early education at Midhurst, Sussex, England; and was entered at Exeter College, Oxford, where he graduated B.A. 1819. The lectures of Buckland developed his tasse for

geology. He studied law, and was called to the bar; but as he did not need a profession for livelihood, he soon turned to geology, making geological tours 1824,28-30, over various parts of Europe, whose results were published in Transactions of the Geological Soc. and else-The first vol. of his great work, The Principles of Geology, appeared 1830, the third 1833. This work, next after Darwin's Origin of Species, has most powerfully influenced the direction of scientific thought in the It broke down the belief in the necessity of stupendous convulsions in past times; and taught that the greatest geological changes might be produced by the forces still at work on the earth. It was subsequently divided into two parts, published as two distinct works -The Principles of Geology; or the Modern Changes of the Earth and its Inhabitants (12th ed. 1876); and The Elements of Geology; or the Ancient Changes of the Earth and its Inhabitants.—The Geological Evidences of the Antiquity of Man (1863) startled the public by its advocacy of Darwin's theory in Origin of Species. L. published also Travels in N. America (1845), and A Second Visit to the United States (1849). During the second sojourn he estimated the recession of the rock at Niagara, and the amount of deposition of alluvium at the delta of the Mississippi; and visited Nova Scotia. He made many other geological excursions; and contributed important papers to Transactions of the Geological Soc., Reports of the British Assoc., etc. By his thorough knowledge and application of the principles of geology as affecting Europe he was able to render vast service in elucidating N. American geology. On the opening of King's College 1832, L. was appointed prof. of geology, but soon resigned. In 1836 and 50, he was elected pres. of the Geological Soc.; and 1864, pres. of the British Association. He was knighted 1848, and created a baronet L. received the degree of D.C.L. from Oxford, and that of LL.D. from Cambridge. See his Life, Letters. and Journals (1881).

LYENCEPHALA, n. plu. lī'ēn-sēf'ā-lā [Gr. leios, smooth; engkeph'ālos, the brain—from kephālē, the head]: one of Owen's primary divisions of mammals; implementals.

LYGODIUM, *lī-gō'dĭ-ŭm*: genus of climbing ferns; including several species natives of warm countries. A N. American species, with fronds one to four ft. high, having a climbing growth upon other plants, is found in shaded or moist places, from Mass. as far south as Ky. It abounds in parts of the Connecticut river valley; and is a favorite, in either a fresh or dry state, for decorations.

LYING, n. lī'ing [from Eng. lie, a falsehood]: the habit or practice of telling lies: Addicted to falsehoods; deceptive. Ly'ingly, ad. lī.

LYING-LYMAN.

LYING, imp. *līng* [Eng. *lie*, to recline]: reclining; being prostrate: N. position of one who lies down. Lying off, being out in the offing, as a ship. Lying to, the state of a ship when the sails are so disposed as to retard or stop its progressive motion. Lying in, confinement of women in childbed.

LYLY (or LILLY, or LYLIE), lĭl'ĭ, John: English dramatist: 1553 or 4—1606, Nov. 20; b. Kent. He studied at Magdalen College, Oxford, and took his degree M.A. 1575. Of his career, nothing is known, except that he lived in London, and supported himself by his pen. L. wrote nine plays, mostly on classical subjects-as Sappho and Phaon, Endymion, Midas, Galathea, and the Maid's Metamorphosis—the lyrics of which frequently show a sweet and graceful fancy; but the two works which chiefly have perpetuated his name, are Euphues, or the Anatomy of Wit, and Euphues and his England. They are in prose, and are marked by great affectation, bombast, and pedantry in language and imagery; yet L. is said to have intended them for models of elegant English, and such the court of Elizabeth at least undoubtedly thought them. According to L.'s editor, Edmund Blount, 'that beautie in court which could not parley euphuism, that is to say, who was unable to converse in that pure and reformed English which he had formed his work to be the standard of, was as little regarded as she which nowe there speakes not French.'

LYM, n. lim [see Lime-Hound]: in OE., a blood-hound.

LYMAN, lī'man, CHESTER SMITH: 1814, Jan. 13-1890, Jan. 29; b. Manchester, Conn.: educator. When 15 years old he began computing almanacs, and prepared tables of eclipses for 15 years ahead. He graduated at Yale 1837, studied in Union and Yale Theol. Seminaries, was pastor of a Congl. Church in New Britain, Conn., 1843-45, had charge of the royal school in Honolulu and explored the Kilauea volcano 1846-7, was a surveyor in Cal. 1847-50, and revised the scientific terms in Webster's Dictionary in New Haven 1850-64. In 1859 he was appointed prof. of industrial mechanics and physics in Yale, was active in organizing the Sheffield Scientific School, was prof. of astronomy and physics there 1871-84, and afterward was prof. of astronomy only. He made several useful scientific inventions and wrote numerous scientific papers, and was pres. of the Conn. Acad. of Arts and Sciences 1857-77, and an honorary member of the British Assoc. for the Advancement of Science.

LY'MAN, HENRY: 1809, Nov. 23—1834, June 28; b. Northampton, Mass.: missionary. He graduated at Amherst College 1829 and at Andover Theol. Seminary 1832, was ordained the latter year, and sailed for the island of Sumatra 1833, as one of the first missionaries to the E. Indian archipelago by the A. B. C. F. M. Soon after be-

LYMAN-LYME REGIS.

ginning his work among the savage Battahs, he and his companion, the Rev. Samuel Munson, were murdered by the natives. This martyrdom in the early period of American Christian missions, so far from discouraging the work, drew public interest to missionary effort, shewed its self-sacrificing spirit, and called forth new recruits. He published Condition and Character of Females in Pagan and Mohammedan Countries (Boston 1832).

LY'MAN, Phineas: 1716-1774, Sep. 10; b. Durham, Conn.: soldier. He graduated at Yale 1738; was tutor there and law student three years; was admitted to the bar 1741; member of the legislature seven years; appointed maj.gen. and commander-in-chief of Conn. militia for the French war 1755; built Fort Lyman (now Edward) on the Hudson; succeeded Sir William Johnson (q.v) in command at the battle of Lake George; took part in the attack on Ticonderoga, capture of Crown Point, surrender of Montreal, and expedition against Havana; and subsequently obtained in England a grant for a tract of land on the Mississippi and Yazoo rivers, and settled near the present Natchez shortly before his death.

LYME GRASS, līm (Elymus): genus of grasses, the species of which are natives of the temperate and colder regions of the n. hemisphere. The spikelets grow in pairs from the joints of the rachis, and each has 2-4 fertile florets, and two awnless glumes, both on the same side.—The SEA L. G. (E. arenarius) is frequent on sandy shores. It is a coarse, grayish grass, often three or four ft. high, with spiny-pointed leaves and upright close spikes; a perennial with creeping roots, very useful in binding the sand. On this account, it is much sown on the shores of Holland. In Iceland and some other countries, it is used for thatch. seed, which is large, is collected in Iceland, and ground into meal, which is made either into porridge or into soft thin eakes, and esteemed a delicacy.—A closely allied species or a variety, GIANT L. G. (E. giganteus), is often sown in Holland, being preferred for its more vigorous growth.—Various expedients are adopted to secure the growth of L. G. seeds in very loose sands, as the laying down of pieces of turf, a gradual advancement from the margin of the sand, etc.

LYME REGIS, $l\bar{l}m$ $r\bar{e}'j\bar{l}s$: seaport, ancient municipal porough, and watering-place of England, in Dorsetshire; at the mouth of a rivulet called the Lyme, 26 m. w. of Dorchester. It received its first charter in the middle of the 13th c., and was a port of importance during the reign of Edward III., for whom it provided three ships to assist in the siege of Calais 1346. Its pier, called the Cobb, is semicircular in form. Blue lias stone is quarried in large quantities and exported. Pop. (1871) 2,333; (1881) 2.043; (1891) 2,365.

LYMINGTON—LYMPHATICS.

LYMINGTON, tim'ing-ton: seaport market-town, and municipal borough of England, county of Hants; at the mouth of the river L., and on a creek communicating with the Solent; 18 m. s.s.w. of Southampton. Salt has long been manufactured; some of the salt-works being of great antiquity. Recently this trade has fallen off. L. is also of some importance as a watering-place. It commands fine prospects of the Isle of Wight and the English Channel, and its vicinity abounds in charming scenery. Pop. (1891) of municipal borough, 4,551.

LYMPH, n. limf [F. lymphe, lymph, sap—from L. lympha, water over which a nymph presides]: nearly colorless fluid in animal bodies, found in the vessels called Lymphatics (q.v.). It has a rather saltish taste, and an alkaline reaction. It coagulates shortly after its removal from the living body, and forms a jelly-like, semi-solid mass, which continues for some time to contract, so that at last the clot is very small, in proportion to the expressed serum. On microscopic examination, the L. is seen to contain corpuscles which do not in any respect differ from the colorless blood-cells, molecular granules, fat globules, and occasionally blood corpuscles. The chemical constituents of L. seem to be precisely the same as those of blood, excepting the substance peculiar to the red corpuscles. From experiments on animals, it has been inferred that more than 28 lbs. of fluid (L. and chyle) pass daily into the blood of an adult man. The L. seems to owe its origin to two distinct sources—viz., to the ultimate radicles of the lymphatic system, which contribute the homogeneous fluid portion, and to the lymphatic glands, which contribute the corpuscles, granules, etc., seen under the microscope. The uses of this fluid are twofold: first to convey from the tissues to the blood effete matters, to be afterward excreted by the skin, lungs, and kidneys; secondly, to supply new materials for the formation of blood. LYMPHATIC, a. limfăt'ik, pertaining to lymph. LYMPHAT'ICS, n. plu. -iks, the minute vessels which carry lymph to all parts of the body (see below). Lymphy, a. lim'fi, containing or resembling lymph. Note.—Skeat says that Lymph is connected with L. limpidus, clear.

LYMPHATICS: vessels in the body, containing the Lymph (q.v.), called also Absorbents, from the property which these vessels possess of absorbing foreign matters into the system and carrying them into the circulation. The lymphatic system includes not only the lymphatic vessels and the glands through which they pass, but also the Lacteals (q.v.), which are nothing more than the L. of the small intestine, and differ from other L. only in conveying Chyle (q.v.) instead of lymph during the latter part of the digestive process.

The L. are minute, delicate, and transparent vessels, of approximately uniform size, and remarkable for their knotted appearance, due to the presence of numerous valves, for their frequent dichotomous divisions, and

245

LYNCEAN-LYNCH.

for their division into several branches before entering a gland. They collect the products of digestion and the products of worn-out tissues, and convey them into the venous circulation near the heart (see Lacteals). They are found in nearly every texture and organ of the body, excepting the substance of the brain and spinal cord, the eyeball, cartilage, tendon, and certain fetal strictures, and possibly also the substance of bone.

The L. are arranged in a superficial and a deep set. The superficial vessels on the surface of the body lie immediately beneath the skin, and join the deep L. in certain points through perforations of the deep fascia; while in the interior of the body they lie in the submucous and sub-serous areolar tissue. They arise in the form of a net-work, from which they pass to lymphatic glands or to a larger trunk. The deep L. are larger than the superficial, and accompany the deep blood-vessels; their mode of origin is not known. The structure of the L. is similar to that of veins and arteries.

The lymphatic or absorbent glands are small, solid, glandular bodies, varying from the size of a hemp-seed to that of an almond, situated in the course of the lymphatic vessels. They are found in the neck (where they often become enlarged and inflamed, especially in scrofulous subjects), in the axilla, or arm-pit, in the groin (where when inflamed they give rise to the condition known as Bubo), and in the ham; while deep ones are found abundantly in the abdomen and the chest.

The lymph of the left side of the trunk, of both legs, of the left arm, and the whole of the chyle, is conveyed into the blood by the Thoracic Duct (q.v.); while the lymph of the right side of the head, neck, and trunk, and of the right arm, enters the circulation at the junction of the axilliary and internal jugular veins on the right side, by a trunk, guarded at its opening by valves.

LYNCEAN, a. lǐn-sē'ăn [L. lyncēŭs, sharp-sighted, as the lynx—from lynx or lyncem, a lynx]: pertaining to the lynx; sharp-sighted.

LYNCH, v. linch [after a man named Lynch (see Lynch Law)]: to inflict pain or punishment without the forms of law, as by a mob. Lynch'ing, imp. Lynched, pp. linsht. Lynch Law, popular vengeance inflicted by a mob; mob-law (see below). Judge Lynch, slang term of personification for the act of lynching.

LYNCH, linch, Thomas, Jr.: 1749, Aug. 5—1779; b. Prince George parish, S. C.: signer of the Declaration of Independence. He was educated at Eton and Cambridge, England, and studied law in London; returned to S. C. and became a planter 1772; joined the first regt. of S. C. provincial troops 1775; was elected delegate to congress to succeed his father 1776, and signed the Declaration; and 1779 sailed for St. Eustatius, W. Indies, on account of debility contracted in military service, and is supposed to have been shipwrecked.

LYNCHBURG-LYNCH LAW.

LYNCHBURG, linch'berg: city in Campbell co., Va., on s. bank of James r., and on James r. and Kanawha canal; at the junction of the Atlantic Mississipi and Ohio, and the Washington City Virginia Midland and Great Southern r.rs.; 90 m. s.w. of Richmond. It is a steep acclivity rising at first gently from the river, which dividing into numerous hills, gives room for beautiful terraces and walks, and picturesque sites for many hand-some dwellings. The famous Otter Peaks are in full view, and the Blue Ridge forms a background 20 m. away. L. is favorably situated for extensive inland trade and manufactures, being in the midst of a large area of magnificent country, with immediate access to rich beds of coal and iron, and abundant water power. But its chief importance is in excellent railroad facilities, and in its enormous tobacco manufacture. It has about 80 tobacco establishments, whose operatives mostly are negroes. The amount of tobacco sold 1870-1 was 17,-425,439 lbs., increasing to 26,000,000 lbs. 1880-1. It has also extensive flour mills and iron foundries; and the cclebrated Botctourt iron works are near. It contains the large machine shops of the Norfolk and Western r.r. Its water supply is furnished by two reservoirs, built in 1828 and 50; the former cost \$50,000, is 253 ft. above the James r., and has a capacity of 400,000 gals., the water being forced 2,000 ft. by a double force pump worked by a large breast wheel. The city has a court house, prison, orphan asylum for girls, graded public school system, including high-schools, several national banks, half a dozen daily, weekly, and monthly periodicals, and more than 15 churches. It was laid out 1786, incorporated 1805. During the civil war it was the base of supplies for the Confederate army until 1865, Feb., when Sheridan destroyed the canal and railroads for some distance around it. Lee was try: to reach it when forced to surrender at Appomatton. Pop. (1900) 18,891.

LYNCH LAW: term in the United States for the trial by private individuals, and punishment of offen or in mobs, without referwhether in organized bodi law. This barbarous mode ence to the ordinary form ws existed in every country of attempt at justice har tement, and sometimes has in times of great popul in countries newly settled, been necessarily resor government is not yet sufwhere the power of. gh in the last class of cases ficiently established the act is not precise, fined as L. L. The name is derived by Webster from a farmer in Piedmont co., Va. (17th c.), who was wont to administer summary flogging to wrong-doers, and to whom his neighbors in lack of any near court of law, were accustomed to bring criminals for trial and punishment. A different derivation is found by some in the story of James Fitzstephen Lynch, mayor of Galway, Ireland, 1493, who, in the spirit of Brutus, with his own hands hanged his son from a window for murder on the high seas. Another derivation

LYNDHURST.

is from the AS. verb linch, to beat with a club.—L. L. has no prevalence, scarcely an existence, in the old and well-settled states; and is universally deprecated as a dangerous relic of barbarism. With frightful abuses, it has yet had some uses at critical times in the early history of California, Oregon, Nevada, Kansas, Colorado, and some other western states and territories. It is understood still to be prevalent in some southern states, being justified as necessary for keeping the negro race in a political inferiority which the law has failed to provide or even to permit. As thus applied, its political bearings excite hot debate.—An ancient English variety of L. L. was known as Lydford Law (q.v.).

LYNDHURST, lind'herst (John Singleton Copley), Lord: 1772, May 21—1863, Oct. 12; b. Boston, Mass.; son of John Singleton Copley (q.v.), (also b. Boston) who was painter of the Death of Chatham, and other esteemed works. The Copleys were originally an Irish family, the painter's grandfather having emigrated from the county of Limerick, and settled at Boston. While L. was an infant, his father removed to England for the practice of his art. L. was educated at Trinity College, Cambridge, where he was a fellow 1797. Called to the bar at Lincoln's Inn 1804, he chose the Midland Circuit, and soon obtained briefs. In politics, he was at first liberal, and long expressed sentiments hostile to the ministry of the day. He ably defended Watson and Thistlewood on their trial for high treason 1817, and obtained their acquittal. Some surprise vas therefore expressed when, 1818, he entered parliment for a govt. borough. In 1819, he became solicition, and 1823 was much to his credition at the company of the rolls: When Canning was charged to form of the rolls. When Canning inistry 1827, he offered the was charged to for great seal to L. (ther I Joshin Copley), who was raised to the upper house, nained lord chancellor 1827 -30. In 1831, he be and chief baron of the exchequer, which offic Visit langed for the woolsack during the brief adn of Sir R. Peel 1834. In 1835, he led the opportulation 12 Melbourne ministry in great power and brilreviews of the session ative party, and pave did much to reanimat July. the way for their returnostile 12 1841. He them became again lord changest a find held the great seal until the defeat of the Pall govt. 1846. After that time, he took little part in home politics; though his voice was often heard on matters of foreign policy, and in denunciation of tyranny in Italy and elsewhere. He died in London. L.'s high attainments as a lawyer have never been questioned, and his judgments-of which that in the great case of Small v. Attwood particularly may be cited-have never been excelled for clearness

LYNDSAY-LYNN.

method, and legal acumen. In the house of peers, he had few equals. When he was 88 years of age, he maintained, with great force and ability, the right of their lordships to reject the Paper Duties Bill. See *Life* of L. by Sir Theodore Martin (1883).

LYNDSAY: see LINDSAY.

LYNN, lin: city in Essex co., Mass.; settled 1629; incorporated 1850; included Swampscott till 1852, and Nahant till 1853. It is on a small harbor w. of the peninsula of Nahant in the n. part of Mass. Bay; connected with Boston, about 10 m. s.w., by the Boston Revere Beach and Lynn r.r., and by a horse railway; with Salem, 5 m., by the Eastern r.r., of the Saugus branch of which it is the terminus. The Saugus r. bounds it on the w., emptying into the harbor; behind the city is a range of hills, with a number of ponds beyond these; the n.e. part is an elevated plain on which is built the most beautiful and healthful portion of the city; on the n.w. it is sparsely settled. The remains of the first smeltingworks in the country are still here, founded 1643; and it is the place where the first fire-engine was made. chief industry now is the manufacture of boots and shoes. being second in this to no other city in the United States. This trade was introduced here 1750. In 1900 there were 258 establishments so engaged, with a capital of \$8,404. 972, employing 10,082 hands, paying \$4,777,672 wages, and yielding products valued at \$17,072,514; cost of materials used, \$25,043,342. Nearly all of them are made by machinery. Next to this industry, in extent and importance is the manufacture of morocco, at the tanning and dressing of kid, goat, and sheep skins. 1900, 12 manufactories were engaged in this, employing 638 hands, and more than \$1,031,000 capital. Minguindustries are the making of machine needles, shoe miglinery, boxes, carriages, cement, etc. The city has stone coasting trade, and fisheries. There are several nation and a manks, with a joint capital of about \$1,300,000; the grance companies; several savings banks; a freed fire library of over 30,000 vols.; 3 public halls; a resemble ent city hall of brownstone, erected at a cons of an a,722; a graded public school system, besides alw stanols; a number of daily, weekly, and other parex exchand between 30 and 40 churches, the strongted to region Methodist, Baptist, Congregational, Ethe civil more Catholic, and University salist. Pine Grovd; thou the in. part of the city, is very handsomely v de' mand is controlled by the There are to my the small public parks, besides the large common in the s. part of the city. soldier's monument of wonze and granite, costing \$30,000, was erected 1873. The city has a well organized police force and fire department with electric alarm; and abundant water supply. The water-works, employing the best apparatus for the purpose known, were built at a cost of \$800,000, and supply 2,000,000 gals. per day, drawn from Breed's and Birch ponds; the reservoir

LYNN-LYNX.

pressure is 177 ft. The streets in the populous portions of the city are paved and well-lighted, and most of the houses are of brick, though many of the earlier frame buildings remain. Pop. (1870) 28,233; (1880) 38,284, (1900) 68,513; debt \$1,606,851; valuation \$52,759,481.

LYNN, or LYNN REGIS, lin rējīs, or King's Lynn: seaport and municipal borough of England, county of Norfolk, about 3 m. from the mouth of the Great Ouse, 41 m. w.n.w. from Norwich. It was formerly fortified, and the old moat forms the e. boundary of the town, and portions of the walls remain. The grammar-school has six exhibitions for Cambridge. Ropes are manufactured, and ship-building carried on. Great numbers of shrimps are caught for the London market. Imports are corn, oil-cake, cork, sulphur, wine, coal, and timber. In 1880, 1,204 vessels in the foreign, colonial, and coasting trades, of 193,223 tons, entered; and 1,175, of 189,441 tons, cleared the port. Pop. (1871) 17,266; (1881) 18,475; (1895) 18,018.

LYNX, n. lingks [L. lynx, a lynx (see Lyncean)]: a wild animal of the cat kind, noted for its keen sight. Lynx-eyed, having acute or keen sight. Lynx-sapphire, 'a lapidary's term for dark-gray or greenish-blue varieties of sapphire.

LYNX: name applied to several animals forming a section of the Felidæ; having a less elongated form than many others of that family, the body elevated at the haunches, long fur, a short tail, and the ears tipped with tufts or pencils of hairs. They are less courageous than other Felidæ of similar size, and prey on small quadrupeds and birds. In pursuit of birds, they climb trees. They are generally of sullen and suspicious temper, and not easily tamed. The name is now given to two forms of the cat tribe: 1. The Caracal (q.v.), probably the L. of the ancients, inhabiting Africa, Syria, Arabia, Persia,



European Lynx (L. virgatus).

and parts of India; 2. Several varieties found in n. and temperate regions of the E. and W. continents. Of the n. lynxes, the species or varieties are numerous, but their distinctions are vague, and even the question whether they are true species or only varieties of one

species, is unsettled. The European L. (L. virgatus) is common in many parts of Europe and Asia, chiefly in mountainous and wooded districts. Its color is variable, but generally dark reddish gray, spotted with reddish brown, the belly whitish. It is about three ft. long. It is proverbial for acuteness of sight. It is hunted in winter for its fur, which is always in demand in the market; but many of the L. skins imported from n. Asia belong probably to other species: those of N. America, probably also many of n. Europe and of Asia, are skins of the Canada L. (L. Canadensis or L. borealis), generally of hoary-gray color with a broad space along the back blackish brown. It is rather larger than the European L., and more clumsy in form.—The BAY L. (L. Rufus), called Wild Cat, is found in more southern parts of N. America, both in mountainous and in swampy districts, and often makes great havoc among poultry.

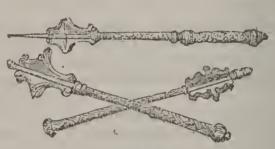
LYON, li'on, MARY; founder of Mt. Holyoke Seminary (now College also) for girls: 1797, Feb. 28-1849, Mar. 5; b. Buckland, Mass. In her girlhood she was an eager student at Byfield, Mass., and elsewhere. She taught at Ashfield and Buckland; then assisted Miss Z. P. Grant in her school at Derry, N. H., and Ipswich, Mass. These young women made the Bible a regular text-book in their schools, and brought a direct and positive Christian influence to bear in all their training. About 1830 Miss L. was impressed with the need of new and more systematic appliances for education of young women, and she soon formed the project—startling in those days—of a permanent college for girls, 'with buildings, library, and apparatus, owned as colleges are, where successive generations of young ladies might be trained.' Finding this plan too large to be practical as a first step, this pioneer of higher education for American women devoted herself as with missionary zeal to founding, for girls with narrow financial resources, an institution of thorough education, in which not only economy, but also industry, independence, and practical efficiency should be subserved—the pupils sharing to considerable extent the daily domestic tasks of the common house-The novelty of the proposal, the general public indifference to the need which Miss L. desired to supply, the positive disapproval evoked in some quarters, were obstacles which Miss L. recognized and devoted herself to overcome. To her task she brought clearness of conviction, the courage of Christian faith, patience, unflagging work, and strong practical judgment. needed money was raised; South Hadley, near Mt. Holyoke, was selected as the site, necessary buildings on a simple and economical scale were provided, and the school opened 1837. Her remaining 12 years of life were given to conducting it with great administrative talent as principal, and consolidating it for the future. In its gradual enlargement, its present high rank, and its world-wide work, it stands as her monument to genera-



Lyre.



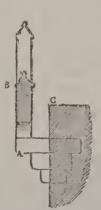
Various Forms of Egyptian, Assyrian, and Greek Lyres.



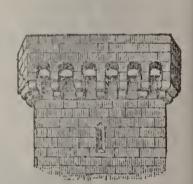
Ancient War-maces.



Herstmonceux Castle.



A, Corbels; B, Para-pet, or breast-work. C. Face of wall.



Machicolations (spaces Machicolations, Tobetween the corbels): over South Gateway A. Corbels; B. Para-Bodiam Castle, Sussex.



Mackerel (Scomber scomber).

LYON-LYON COURT.

tions to come. She sought to bring her own work and that of her assistant teachers into the domain of a joyful Christian self-sacrifice, with plain living and small pecuniary remuneration. In all her schools she taught about 3,000 pupils. She wrote the Missionary Offering, and Tendencies of the Principles and System of the Mt. Holyoke Female Seminary.—Pres. Hitchcock of Amherst College wrote her biography (pub. Northampton 1851; new ed. revised, New York 1858).

LY'ON, NATHANIEL: 1819, July 14-1861, Aug. 10; 1. Ashford, Conn.: soldier. He graduated at the U.S. Milit. Acad. 1841; was assigned to the 2d U.S. inf.; served in Seminole Indian war in Fla.; promoted 1st lieut. 1847; took part in the Mexican war, was brevetted capt. for gallantry at Contreras and Chrubusco, and wounded at the Belen Gate, Mexico City; was on Indian duty in Cal. and Or. 1848-53; promoted capt. 1851; and served in Kan. and Mo. 1854-61, rendering valuable aid to the free-state party in Kan. 1854-56. Early in 1861 he began organizing and drilling home-guards in St. Louis; Mar. 31 was placed in command of the U.S. arsenal and troops; May 10 captured the secession camp of state guards with a large amount of cannon, small arms, and amunition; and May 17 was appointed brig.gen. of vols. and placed in command of the dept. of the west. On June 17 he routed the state guards under Gov. Jackson at Booneville; Aug. 2 defeated the Confederates under Gen. McCulloch near Springfield; and Aug. 10, after being twice wounded in the battle on Wilson's creek, was shot dead while leading a charge. bequeathed \$30,000, nearly all his property, to the govt. to aid the prosecution of the war.

LY'ON COURT: one of the inferior courts of Scotland, having jurisdiction in questions regarding coatarmor and precedency, also in certain matters connected with the executive part of the law. It is presided over by the Lyon King-at-arms (q.v.) or Lord Lyon. tached to the Lyon Court are a certain number of Heralds (q.v.) and Pursuivants (q.v.) appointed by him, whose principal duty is now the execution of royal proclamations in Edinburgh. Lyon appoints the messengersat-arms (officers who execute the process of the court of session); superintends them in their duty; and takes cognizance of complaints against them.—See Lyon King-The Scotch acts authorize the Lord Lyon to iuspect the ensigns armorial of all noblemen and gentlemen in Scotland, and oblige all persons who, by royal concession or otherwise, had previously a right to arms, to matriculate or register them in the Lyon's books. cause shown, Lyon also empowers applicants to alter or add to the coat to which they are already entitled. his judicial capacity, Lyon investigates and decides in claims to particular coats of arms or armorial distinctions, his decision being subject to review in the court of session.

LYON KING-AT-ARMS-LYONS.

Right to bear arms is acquired either by descent or by grant. 1. In the former case, only the representative or head of the family can use the undifferenced coat; but a cadet, has, by a matriculation, the family coat assigned to him, with the proper difference. 2. Where no hereditary right exists or can be proved, an original grant of arms may be bestowed by the Lord Lyon. In strictness, the using of a crest on one's plate or seal without authority, is a transgression of the laws; but practically, prosecutions have generally been confined to cases of open and public assumption of a shield of arms.

LYON KING-AT-ARMS, lī'on king-at-armz, or Lord Lyon: chief heraldic officer in Scotland, so called from the lion rampant in the Scottish royal shield; thus entitled since the first half of the 15th c. (see Lyon Court). He holds office directly from the sovereign by commission under the great seal. (See King-at-Arms.) So sacred has this person been held, that in 1515 Lord Drummond was declared guilty of treason, attainted, and imprisoned in Blackness Castle, for striking Lyon. His crown is now worn only at coronations, and is similar to the crowns of the English king-at-arms. Lyon's badge or medal exhibits the arms of Scotland, and on the reverse, St. Andrew on his cross. Besides the velvet tabard of a king-at-arms, he has an embroidered crimson velvet robe; and as king-at-arms of the Thistle, a blue satin mantle, lined with white, with a St. Andrew's Cross on the left shoulder.

LYONNAIS, $l\bar{e}$ - $\bar{o}n$ - $n\bar{a}'$: former province of France, bounded w. by Auvergne, and s. by Languedoc. Its territory coincides nearly with the present dept. of Rhone, Loire, Haute-Loire, and Puy-de-Dôme.

LY'ONS: a former city, now a part of Clinton, Ia.; on the Mississippi river and the Chicago and Northwestern and Chicago, Milwaukee and St. Paul railroads; 78 m. below Dubuque, 140 m. w. of Chicago. It has several saw, flour, and paper mills; machine shops; sash, oil-can, and carriage factories; 8 churches; high school, public graded schools, seminary, and excellent private schools; public library; 1 national bank (cap. \$100,000), and extensive nurseries. Pop. (1870) 4,088; (1880) 4,095; (1885) 4,893; (1890) 5,799; (1900) included in Clinton.

LYONS, $l\bar{i}'onz$ (French Lyon, $l\bar{e}$ - $\bar{o}ng'$): third city of France in population, and first in manufactures; cap. of the dept. of the Rhone; at the confluence of the river Rhone with the Saône, 316 m. by railway s.s.e. of Paris, 218 n.n.w. of Marseille, and 100 w.s.w. of Geneva. It is partly on a low-lying peninsula between the two rivers, and partly on hills surrounding them, in a beautiful district of gardens, vineyards, and villas. It is the seat of an abp., and is the *chef-lieu* of the seventh milit. division. Many of the public buildings are interesting for their architecture, extent, and antiquity. Of these, the cathedral

and church of St. Nizier, the Hôtel-de-Ville (finest townhall in the empire), the hospital, the public library (150,-000 vols.), and the Palais des Beaux Arts, are perhaps most notable among numerous and important institu-There are also a university-acad., an imperial veterinary school-the first founded in the country, and still the best—schools for agriculture, medicine, and the fine arts, etc. To the famous church on the height of Fourvières, 410 ft. above the river, there is great resort of pilgrims—estimated at 1,500,000 annually. The printing trade is extensive in L., and it has long been known for the vigor of its journals, e.g., Courrier de Lyon. The two rivers are crossed by 19 bridges; 12 over the Saône, and 7 over the Rhone. The quays, 28 in number, are said to be the most remarkable in Europe: the principal are St. Clair, St. Antoine, and Orleans. There are several large and important suburbs—La Guillotière, Les Brotteaux, La Croix-Rousse, etc.; several fine squares, of which the *Place Bellecour* is one of the largest in Europe. The fortifications extend in a circle of 13 m. round the city. From its situation on two great rivers, and on the Paris and Marseille and other railways, L. has become the great warehouse of s. France and of Switzerland. The principal manufactures of L. are silk stuffs of all kinds, which have long been in highest esteem. mean annual value of silk goods manufactured is estimated at about \$75,000,000. An immense number of establishments working 120,000 looms in L., its suburbs, and surrounding villages, give employment directly or indirectly to 800,000 hands. Nets, cotton goods, blankets, hats, gold and silver lace, chemical products, drugs, liquors, earthenware, are important articles of manufacture. The trade of L. is chiefly in its own manufactures and in products of the vicinity; the arms and silk ribbons of St. Etienne, and the wines of Côte-Rôtie, Hermitage, and St. Peray.

L., anc. Lugdunum, was founded B.C. 43 by Munatius Plancus. Under Augustus it became cap. of the province Gallia Lugdunensis, possessed a senate, a college of magistrates, and an athenaum, and became the centre of the four great roads that traversed Gaul. In A.D. 58, it was destroyed in one night by fire; but was built again by Nero, and embellished by Trajan. In the 5th c., it was one of the principal towns of the kingdom of Burgundy; and in the 11th and 12th c., it had risen to great pros-To escape the domination of the lords and archbishops, the inhabitants placed themselves under the protection of Philippe-le-Bel, who united the town to France 1307. After the Revolution (1789), L. which had first supported the movement with great enthusiasm, eventually became terrified at the acts of the central power, and withdrew from the revolutionary party. The result was, that the convention sent against L. an army of 60,000 men, and after a disastrous siege, the city was taken, and almost totally destroyed. It rose again, however,

under the first Napoleon; and though, since then, it has frequently suffered much from inundations (1840,56) and from the riots of operatives (1831,34), it is now prosperous. It is a centre of red republicanism and socialism. Pop. city and suburbs (1891) 416,029, (1901) 459,099.

LY'ONS, RICHARD BICKERTON PEMELL, Lord, D.C.L.: 1817, Apr. 26—1887, Dec. 5; b. Lymington, England: diplomat. He was educated at Winchester School and Christ Church, Oxford: appointed British attaché at Athens 1839, Dresden 1852, and Florence 1853; sec. of legation at Florence 1856; succeeded his father, the first Lord L., and was appointed envoy to Tuscany 1858; minister to the United States 1858, Dec.—1865, Feb., Turkey, 1865, and France 1867, July—1887, Nov.; was sworn member of the privy council 1865; received degree D.C.L. from Oxford 1865; and became viscount 1881, earl 1887.

LY'ONS, GULF OF: portion of the Mediterranean indenting s.e. France, bordered also by Catalonia in Spain as far s. as Cape San Sebastian; about 140 m. wide at its opening, and extending about 80 m. into the land. The chief rivers emptying into it are the Rhone, Hérault, and Aude. It is said to have its name from the lion on account of its furious storms.

LYPEMANIA, n. $l\bar{\imath}$ -pe-mā'nī-a [F. lype'manie—from Gr. lupē, pain of mind, grief; mania, madness]: in men. path., the melancholia of the ancients. The term was introduced by Esquirol to signify disorder of the faculties with respect to one or a small number of objects, with predominance of a sorrowful and depressing passion.

LYRATE, a. $l\bar{\imath}'r\bar{a}t$, or Ly'rated, a. $-r\bar{a}t$ -ĕd [L. lyra, a lyre]: in bot., applied to a leaf having a large terminal lobe, and several pairs of smaller lobes, decreasing in size toward the base.

LYRE, n. līr [F. lyre—from L. lyra; Gr. lura, a harp: It. and Sp. lira: oldest stringed musical instrument of the Egyptians and Greeks. There are many different kinds and sizes; e.g., Lyre da Braccio, Lyre da Gambe, Lyre Guitare, etc. Lyric, a. lǐr'ĭk, or Lyrical, a. lǐr'ĭkăl [L. lyricus, of or pertaining to a lute or lyre]: sung, or fitted to be sung, to the harp or lyre. Lyr'ic, n. name given to a certain species of poetry, because it was originally accompanied by the music of that instru-Lyric poetry (see Epic Poetry) concerns itself with the thoughts and emotions of the composer's own mind, and outward things are regarded chiefly as they affect him in any way. Hence it is characterized generally as subjective, in distinction from epic poetry, which is objective. Some lyric poetry has an objective form, but on consideration reveals as its motive a subjective Purely lyrical pieces are, from their nature, shorter than epics. They fall into several divisions, the most typical of which is the song, which is subdivided into sacred (hyms) and secular (love-songs, war-songs,

LYRE-BIRD.

comic songs, etc.). Lyrist, n. lī'rīst, one who plays on the harp or lyre.

LYRE'-BIRD, or Lyre-pheasant, or Lyre-tail (Menura): genus of birds, of which the best known species (M. superba) is a native of New S. Wales, where it is generally called Lyre-pheasant. The proper place of this genus has been disputed by ornithologists, some placing it among the Insessores, near to thrushes and wrens, other among gallinaceous birds, with megapodes. The large feet and habit of scraping, ally the L. with the latter; the form of the bill, the bristles at the base of the bill, and above all, its musical powers, connect it with the former, to which it was unhesitatingly referred by Cuvier. It is a bird about the size of a pheasant, frequenting the brush, or sparsely-wooded country, in the unsettled parts of New S. Wales, but retreating from inhabited districts. It is extremely shy and difficult to approach. It is far the largest of all song-birds. It possesses the power of imitating the song of other birds.



Lyre-Bird (Menura superba).

The tail of the male is very remarkable and splendid, the 12 feathers being very long, and having very fine and widely separated barbs; while, besides these, there are two long middle feathers, each of which has a vane only on one side, and two exterior feathers, curved like the sides of an ancient lyre. The L. makes a domed nest.—A second species (M. Alberti), also Australian, has recently been discovered, and has been named in honor of the

LYRENCEPHALA-LYSIS.

late Prince Albert: the lyre-shaped feathers of its tail are comparatively short.

LYRENCEPHALA, n. līr-ĕn-sĕf'a-lâ [Gr. lura, a lyre; engkephalon, the brain, so named because the brain of reptiles somewhat resembles the loose brain of birds]: name given by Owen to reptiles.

LYS, *les*, or Leye, *li'eh*: tributary of the Scheldt, rising in France near the little town of Lysbourg, in the dept. of Pas-de-Calais, and flowing n.e., joining the Scheldt at Ghent in Belgium after a course of 100 m. The L. was formerly the boundary between France and Germany.

LYSANDER, lī-săn'der: famous Spartan warrior and naval commander, of extraordinary energy and military skill; but not less remarkable for cunning, revenge, and ambition: d. B.C. 395. He spent part of his youth at the court of Cyrus the Younger, and B.C. 407 was appointed to the command of the Spartan fleet (his first appearance in history), from which time he constantly prosecuted the design of overthrowing the Athenian power to exalt that of Sparta. He defeated the Athenian fleet at the promontory of Notion; and being again intrusted with the management of the fleet, after the defeat of his successor, Callicratidas B.C. 405, he was again victorious. He swept the s. part of the Ægean, and made descents on both the Grecian and the Asiatic coasts. He then sailed n. to the Hellespont, and anchored at Lampsacus. An immense Athenian fleet soon made its appearance at Ægospotami, on the opposite side of the straits, amounting to 180 Of these, 171 were captured by L. a few days afterward. The blow to Athens was tremendous. Everywhere, her colonial garrisons had to surrender, and Spartan influence predominated. Finally, B.C. 404, he took Athens itself. His popularity now became so great, especially in the cities of Asia Minor, that the Spartan ephors dreaded the consequences, especially as they knew how ambitious he was. He was even worshipped as a god, and his pride became boundless. All means were taken to thwart his designs, until finally he seems to have resolved to attempt the overthrow of the Spartan constitution; but this scheme was prevented by his death at the battle of Haliartus in the Bœotian war.

LYSIMACHIA, *lis-i-mā'ki-a*: sharing the popular name *Loosestrife* with some plants of a different ord. (see LYTHRACEÆ): genus of plants of nat. ord. *Primulacæ*, primroses. The species are numerous in various parts of the world. Gray enumerates 8 in the United States. One, *L. nummularia*, is a garden-plant introduced from Europe, the Moneywort.

LYSIS, n. lī'sīs [Gr. lusis, a loosing; luō, I loose]: in arch., a plinth or step above the cornice of the podium which surrounds the stylobate; in med., the gradual cooling down and defervescence in fever slowly and regularly for several days without any marked increase of excreta.

LYTHRACEÆ-LYTTON.

LYTHRACEÆ, lī-thrā'sē-ē: natural order of exog. nous plants, consisting of herbaceous plants, with a few shrubs; the branches frequently four-cornered. leaves are generally opposite, entire, and sessile. flowers are solitary or clustered, regular or irregular, and either axillary, racemose, or spiked; the calyx tubular, the petals inserted into the calyx, very deciduous, sometimes wanting. The stamens are inserted into the tube of the calyx below the petals, sometimes equal to them in number, sometimes twice or thrice as many. The ovary is superior, generally 2-6 celled. The fruit is a membranous capsule with numerous seeds.—There are about 300 known species, natives of tropical and temperate, or even of cold climates. Some are occasionally applied to medicinal uses, upon account of astringent, narcotic, or febrifugal properties: among these is the Purple Loosestrife (Lythrum salicaria), growing in moist places and about the margins of ponds and streams, with beautiful leafy spikes of purple flowers; a decoction of either the root or the dried leaves of which is sometimes advantageous in diarrhea: it grows in wet meadows in New England and N. Y. Other species of the genus Lythrum are found in other states. (For a plant similarly named, see Lysimachia.) The Henna (q.v.) of Egypt is produced by Lawsonia incrmis, a plant of this order. The leaves of another (Pemphis acidula) are said to be a common pot-herb on the coasts of tropical Asia. The leaves of Ammania vesicatoria, E. Indian aquatic plant, are very acrid, and are sometimes used as blisters.

LYTTELTON, ltt'l-ton, George, Lord: 1709–1773, Aug. 22; son of Sir Thomas L. of Hagley, in Worcestershire, descendant of the great Sir Thomas de Littleton (q.v.). He was educated at Eton and Christ Church, Oxford; entered parliament 1730, held several high political offices, and was raised to the peerage 1759. L. had formerly considerable repute as an anthor. His best known works are Observations on the Conversion and Apostleship of St. Paul (1747), Dialogues of the Dead (1760), History of Henry II. (1764).—He had a son, Thomas, Lord L., who died young, as conspicuous for profligacy as his father for virtue.

LYT'TLETON (or LIT'TLETON, or LYT'TELTON), Sir THOMAS DE: see LITTLETON, Sir THOMAS DE.

LYTTON, lit'on, Lord (better known as Sir Edward George Earle Lytton Bulwer-Lytton, Baronet): 1805, May—1873, Jan. 18; youngest son of Gen. Bulwer of Wood Dalling and Haydon Hall, Norfolk, England. He received his education at Cambridge, where he graduated B.A. 1826, M.A. 1835, distinguished as a brilliant writer, and to some extent as a politician.

His first publication was a poem on *Sculpture*, which gained the Chancellor's prize for English versification at Cambridge 1825. In 1826, he published a collection

of miscellaneous verse, Weeds and Wild Flowers, and in the year following, a tale in verse with the title O'Neill, or the Rebel. In 1827, his first novel, Falkland, was published anonymously. Next year, he published Pelham, which astonished the critics by its cynicism and its icy glitter of epigram. The Disowned, Devereux, and Paul Clifford followed in rapid succession. In 1831, he broke into more passionate and tragical regions in Eugene Aram, and after that ceased for a period to convulse the About this time, he succeeded Campbell as editor of The New Monthly Magazine, and contributed to its pages a series of papers afterward collected under the title The Student. In 1833, he produced England and the English. In 1834, he returned to fiction, and published in illustrated form The Pilgrims of the Rhine. This was followed by The Last Days of Pompeii, a work of higher class than any of his former productions. enzi followed in the same splendid vein, and received the same admiration. His next work was a play in five acts, The Duchess of La Valliere, which failed on the Ernest Maltravers came the year after, stage 1836. which, as containing his views on art and life, has ever been a favorite with his more thoughtful readers. the same year, he published Athens; its Rise and Fall, full of research and splendid rhetoric. Leila and Calderon appeared 1838. His next efforts were in the difficult walk of the drama, in which he had formerly He produced The Lady of Lyons and Richelieu, both of which remain among the most popular modern English plays.

Eva, The New Timon, King Arthur, were poems; the next novels were Zanoni, The Last of the Barons, Harold, Some great triumphs were yet to come. and Lucretia. The Caxtons, a domestic novel, followed by My Novel, gave the world a crowning proof of L.'s versatility. What will He do with It? A Strange Story; St. Stephen's, a clever poem; Money and Walpole, coinedies; Caxtoniana, essays; and the translation of Horace's Odes, deserve mention. L. wrote much for the Reviews; and as rector of Glasgow and Edinburgh Universities, gave His latest fictions were The Coming brilliant addresses. Race, published anonymously 1873; Kenelm Chillingly (1873); and The Parisians (unfinished, 1873). A collection of his Speeches appeared 1874. His writings show wonderful versatility, untiring rapidity in production, great brilliancy of invention, splendid richness of style -occasionally overwrought-and a capacity for strange speculations and discursive theories by which is added sometimes the charm of mystery. His moving sentiments were noble and his influence was healthful.

At the age of 26, L. entered parliament as member for St. Ives, and attached himself to the Reform party. In 1832, he was returned as member for Lincoln, and held that seat till 1841. In 1835, he received his baronetcy from the Melbourne administration ostensibly for bril-

LYTTON.

liant services rendered to his party as a pamphleteer. In 1844, he succeeded, on the death of his mother, to the Knebworth estates, and sought to return to parliament; in 1847, he contested Lincoln unsuccessfully; and in 1852, he was returned as member for the county of Herts, and attached himself to the party headed by Lord Derby. During the Derby administration (1858-9), he was colonial sec. He did not shine as a debater, but some of his speeches were eloquent. The first vols. of Life, Letters, and Literary Remains of L., by his son, were published 1883.

LYT'TON (EDWARD ROBERT LYTTON BULWER-LYT-TON), Earl: b. 1831, Nov. 8; son of Lord Edward George Earle Lytton Bulwer-Lytton. When 18 years of age, he entered the diplomatic service. He has served the crown as a diplomatist in almost every European capital, and 1876 became viceroy of India. In 1877, he presided at the ceremony of proclaiming the queen empress of India. The tedious and unpopular Afghan War began in his viceroyalty; and on the overthrow of the conservative ministry 1880, L. resigned and returned to England. He received the grand cross of the Bath 1877, was raised to the dignity of an earldom 1880, and was appointed ambassador to France 1887. His works, published mostly under the pen-name OWEN MEREDITH, include Clytemnestra (1855); Lucile (1860); Tannhäuser (1861); The Ring of Amasis (1863); Fables in Song (1874); Speeches of Edward, Lord Lytton; Life, Letters, and Literary Remains of Edward Bulwer, Lord Lytton (1883); Glenaveril (1885); and Ad Æsopum (1889). He died Nov. 24, 1891.

M

M, or m, em: thirteenth letter of the Eng. alphabet, a consonant, and one of the labials; from the closure of the lips in its pronunciation being attended with a humming sound, it is called also a labial-nasal. LETTERS. Its Hebrew name is Mem, i.e., 'water,' and its original form was probably a waving line represent-M is liable to many changes, and often dising water. appears altogether. The Greek molubdos corresponds to Lat. plumbum; an old form of Lat. bonus, benus, or belus, was manus, which probably accounts for the comparative melior (see B). Final m, in Latin, was pronounced with such a weak, undecided sound, that it was proposed to write it with half the letter; hence, also, before the spelling of the language had become fixed, it had in many cases been altogether dropped, as in lego for legom: see Inflection. The nasal sound in final m in French seems a relic of the Roman pronunciation.

M': Scotch prefix of some proper names: see MAC.

MA, n. mâ: mother—a contracted form of mamma, child's name for mother.

MA'AM, n. măm: madam—the usual colloquial contraction of madam.

MAAS, mâs (Lat. Mosa, Fr. Meuse): large affluent of the Rhine, rising in France, in the dept. of Haute-Marne, near the village of Meuse, flowing northerly through France, Belgium, and Limburg, then e. through Holland to the German Ocean. From its junction with the Waal, a branch of the Rhine, to the mouth of the Yssel, it is called the Mervede. At Dordrecht, it divides into two branches, inclosing the island of Ysselmonde—of these, the n. is called the Nieuwe Maas (New Maas, the s. the Oude Maas (Old Maas). These branches unite on the e. side of the island of Rozenburg, after which the river falls into the North Sea, long. 4° 5' e. Its entire course is 500 m., for 360 m. of which (from Verdun, dept. of Vosges, France, to the mouth of the river) it is navigable. The area drained by the M. is estimated at 19,000 sq. m. Its principal affluents are the Sambre and the Dieze, on the left; and the Ourthe, the Roer, and the Niers, on the right. Of the important towns on the banks of the M., the principal are Namur, Liége, Maastricht, Gorkum, Dort, and Rotterdam.

MAASHA, n. mâ-ăsh'a [native name]: E. Indian coin, in value about five cents—

MAASTRICHT-MABIE.

MAASTRICHT, or MAESTRICHT, mas'tricht (called by the Romans Trajectum ad Mosam, to distinguish it from Trajectum ad Rhenum, now Utrecht): very old town, cap. of the province of Limburg, in the Netherlands. Pop. (1890) 32,676. M. is on the left bank of the river Maas, which separates it from the town of Wijk, with which there is connection by a stone bridge, 500 ft. in length. Formerly an important fortress, M. is still a garrison town; but the ramparts were dismantled 1871-The town was founded in the 5th c., the seat of the bishop being transferred thither after Attila had plundered Tongres, 451. It is 15 m. n. of Liége, 18 w. of Aix-la-Chapelle (Aken), and pleasantly situated in a hilly district. The streets are broad, and the houses regularly and well built, giving an air of beauty and respectability. There are many paintings, and a select public library in the Town-house, a large square stone building, ornamented with a tower, and standing on the great market. M. has one Lutheran, one Dutch Reformed, one French Reformed, and four Rom. Cath. churches; also a Jewish synagogue; three hospitals, two orphan houses, an Athenæum, and other public buildings. The plains are shaded with trees and refreshed by There is railway communication with all parts of the Netherlands, and other countries of the continent. M. has considerable trade. Earthenware, glass, arms, tools, objects in lead, copper and zinc, tobacco, and cigars are manufactured; other industries are soapboiling, gin-distilling, brewing, sugar-refining, and ironfounding.

M. has often felt the scourge of war, and the evils incident to a frontier fortified town. It is surrounded by broad and deep canals. It is commanded by the Pietersberg, formerly called *Mons Hunnorum*, a soft calcareous mountain, which has been extensively mined, forming a cavernous labyrinth several leagues in length. Among other fossils, there have been found in these workings two heads of the gigantic Mososaurus (q.v.): see also

MAESTRICHT BEDS.

MAB, n. māb: queen of the fairies in Northern mythology: in English poetry she appears as the 'fairies' midwife' delivering the brain of its dreams (Romeo and Juliet, Act i. sc. iv.).

MABA, n. $m\hat{a}'ba$ [native name of the tree on the island of Tongataboo]: germs of Ebenacea, closely akin to diospyros. It is believed to furnish the ebony of Ceylon. The berries of M. buxifolia are eaten by the natives of India. The wood is dark-colored, very hard and durable.

MABBY, n. mab'i [native name]: spirit distilled from potatoes in Barbadoes.

MA'BIE, HAMILTON WRIGHT: writer and editor: b. Cold Spring, N. Y., 1846. After graduating at Williams College 1867, he studied at the Columbia law school,

MABILLE-MACACO.

New York, graduating 1869, but was led into literary labor. He has written Norse Stories, and edited Michaud's History of the Crusades, adding a chapter supplementary. In 1879 he became assist, ed. of the Christian Union, and has been for several years its associate ed. with Dr. Lyman Abbott. He has fine literary taste, excellent critical judgment, and a both natural and cultured grace of expression.

MABILLE, or Jardin Mabille, zhâr-dăng' mâ-bēl': place of amusement in Paris, on the s. side of the Champs Elysée, partly roofed, partly open to the sky. It was established 1840, and its nightly public balls have long been famous for grotesquely extravagant though graceful dancing, and for the fantastic license taken by the revellers. The decorations, appointments, and music are made attractive; but the company is, in general, not reputable.

MABILLON, mâ-bē-yōng', Jean: learned Benedictine historian: 1632, Nov. 23—1707, Dec. 27; b. St. Pierremont, in Champagne. He studied at the Collége de Reims; assisted D. Luc d'Achery in his labors on his vast historic recueil, entitled Spicelegium; undertook an ed. of the works of St. Bernard; and 1668, published the first vol. of Acta Sanctorum Ordinis S. Benedicti, of which the last part appeared 1702. His classical work De Re Diplomaticâ appeared Paris 1681. Colbert offered him a pension of 2,000 livres, but he declined it. In 1683, Colbert sent him to Germany, to collect documents relative to the history of France, and he was afterward sent to Italy for a similar purpose. He died in Paris. Other works are Vetera Analecta (1685); Musœum Italicum, seu Collectio Veterum Scriptorum ex Bibliothecis Italicis eruta (1689).

MABINOGION: see Welsh Language and Literature.

MABUSE' (JAN DE GOSSAERT): see GOSSART, JAN DE.

MAC, or Mc, or M', a. māk: common Gaelic prefix frequent in Scottish names. It means 'son,' synonymous with Fitz in English, and is prob. allied to Gothic magus, a son, a boy, the feminine of which is magaths (Germagd, a maid). The root is prob. Sanskrit, mah, to grow (see G). In Welsh, magu means to breed. The Welsh form of Mac is Map, shortened into 'ap or 'p, as Ap Richard, Son of Richard, whence Prichard. (O'= grandson, in Ireland.)

Note.—Me and M' are shortened forms of Mac, with

same pronunciation.

MACACO, n. ma-kâ'kō, or Macauco, ma-kaw'kō [native name]: Buffon's name for Lemur cotta, the ringtailed or cat-like lemur. Its color is chinchilla gray, with a banded tail of black and gray rings; the under parts are white. The hind limbs exceed the fore limbs in height, and this gives the body an arched appearance. They are readily domesticated: see Lemur.

MAČAĆUS—MACADAMIZE.

MACACUS, n. mä-kä/küs: bonnet-apes, or ape-baboons—a genus of old world monkeys.

MACADAM, mak-ăd'am, John Loudon: road-maker: 1756-1836: b. Scotland. He passed his youth in the United States. On his return, he was appointed manager of a district of roads in Ayrshire, and originated the system of road-making now known by his name. In 1819, he was appointed by parliament to superientend the roads in the Bristol district, England; 1827, gen. surveyor of the metropolitan roads; receiving as reward of his success a grant of £10,000 from government. His system rapidly became general throughout England, and was introduced into France. M. d. at Moffat, Dumfriesshire. See Macadamize.

MACADAMIZE, v. mäk-äd'ăm-īz [from the inventor, John L. Macadam (q.v.)]: to build a road or path with broken stones of selected sizes, forming a hard smooth surface. MACAD'AMI'ZING, imp. MACAD'AMIZED, pp. -īzd: And. denoting a road made or repaired with carefully prepared stones. The process of Macadamizing is as follows: For the foundation of a road, it is not necessary to lay a substratum of large stones, pavement, etc., as it is indifferent whether the substratum be hard or soft; and if any preference is due, it is to the latter. The material for roads must consist of broken stones (granite, flint, or whinstone, far the best); these must in no case exceed six ounces each in weight, and stones of one to two ounces are to be preferred. The large stones in the road are to be loosened, and removed to the side, where they are to be broken into pieces of the regulation weight; and the road is then to be smoothed with a rake, so that the earth may settle down into the holes from which the large stones were removed. The broken material is then to be carefully spread over it; and it is of great importance to the future quality of the road, that it be not laid on in shovelfuls to the requisite depth, but scattered in shovelful after shovelful, till a depth of 6 to 10 inches, according to the quality of the road, has been obtained. The road is to have a fall from the middle to the sides of about 1 ft. in 60, and ditches are to be dug on the field-side of the fences to a depth of a few inches below the level of the road. This system, which at one time promised to supersede every other, is calculated to form a hard and impermeable crust on the surface, thus protecting the soft earth below from the action of water, and so preventing it from working up through the road-bed in the form of mud. Strange to say, it has succeeded admirably where a road had to be constructed over a bog or morass: in some other circumstances, it has been found deficient, and various improvements have been made on the principle which it pre-One of these is the Telford road (named from its inventor) in which large stones are in bedded as foundation with the interstices filled with sand, earth, etc., pounded down; then, successive layers of broken

MCALLISTER-MCALL MISSIÓN.

stone of gradually decreasing sizes, the top layer being of very small fragments—each layer being tamped with gravel, sand, etc., and a very heavy roller being passed over the top when finished. See ROADS.

McALLISTER, mak-ăl'is-ter, Fort: earthwork (23 guns) erected by the Confederates on Genesis Point, on the Great Ogeechee river, 6 m. from Ossabaw Sound and 12 m. s. of Savannah, as an additional protection to that city. Its garrison of about 200 men resisted assaults by Union monitors under Com. Worden 1863, Jan. 27, Feb. 1, and Mar. 3; but were forced to surrender to the 2d div. 15th army corps under Gen. Hazen, after an assault and hand-to-hand fight over the parapet 1864, Dec. 13. The capture of this fort led to the surrender of Savannah and the triumphant completion of Sherman's march from Atlanta to the sea.

McALL MISSION, in France: organization of Christian work on a missionary basis, with special reference to the working-people. Though entirely Protestant in spirit, it is independent of sectarian control, and does not make it a special object to attack the Roman Church. It concerns itself with making Christ known as the Helper of men. It originated in a visit to Paris 1871 by the Rev. R. W. McAll, pastor of a Congl. church in Hadleigh, Lancashire, England. He and his wife were impressed with the opportunity for religious work in what were deemed the most unpromising quarters of Paris; and their intended four days' visit developed into the present mission. Mr. McAll studied the language, previously unknown, and opened his first station 1872, Jan., in Belleville, the artisan quarter. The station, as all stations since have been, was a shop, with a large cloth sign inviting working-people. The work has grown, drawing help and helpers from England, Scotland, and the United States, and meeting surprising favor among the French people, until in 1884 there were 94 stations reported. In 1881 there were 24 in Paris, 8 in the environs, besides stations in Lyons, Boulogne-sur-Mer, and other places; and 5,755 meetings for adults were held, with attendance 525,569. In each district around a station small bills of invitation are distributed, and persons at the doors encourage those who will to enter. each room is a harmonium, and simple hyms are sung alternately with short addresses or readings. Brevity is the rule. On Sundays there is more of the usual form of a religious service, with a short sermon and with prayer. The reading of the Bible is always listened to with great interest. Besides the distinctively spiritual results in many cases of conversion, a gratifying feature is that the police department of Paris find marked decrease of disagreeable duty in some of the most turbulent districts as the result of the work at some of these Frequent calls for the establishment of mission-stations come from towns in the provinces: these are met as far as men and money for them can be pro-

McALPINE-MACAO.

cured. In the United States the American McAll Assoc. has been organized to gather contributions for the work.

McALPINE, mak-ăl'pin, William Jarvis: 1812-1890, Feb. 16; b. New York: civil engineer. He received an academic education; became a civil engineer 1827; engaged in the construction of canals and other hydraulic works till 1839; engineer of the e. div. of the Erie canal extension till 1846; chief engineer of the construction of the dry docks in the Brooklyn navy yard; elected N. Y. state engineer 1852; and was state railroad commissioner 1854-56. Subsequently he was acting pres. and chief engineer of the Erie railroad, and engineer of the Chicago and Galena and the Ohio and Mississippi railroads; constructed the water works in Albany and Chicago, and planned those in Brooklyn, New Bedford, and elsewhere; and 1870, at the request of the Austrian govt. prepared plans for the improvement of the cataracts of the Danube, which were adopted. His last work was as consulting engineer on construction of the new capitol at Albany.

MACAO, mâ-kow': Portuguese settlement on the coast of China, lat. 22° 11'n., long. 132° 33' e., on the w. part of the estuary of the Canton or Pearl river, about 40 m. from Hong-kong, on the opposite side of the estuary. M., about eight miles in circuit, is on a small peninsula, projecting from the s.e. extremity of the large island of Hiang-shan. Its position is agreeable, nearly surrounded with water, and open on every side to the seabreezes, with good variety of hill and plain. The town is slightly defended by some forts. Daily steam-communication is maintained with Hong-kong. The principal public buildings are the cathedral and churches. It is one of the most salubrious ports in China, and recent sanitary improvements have added to its healthfulness. The maximum temperature is about 90°, the minimum about 43°. The Portuguese obtained permission from the Chinese authorities 1557 to settle in M. on account of their assistance in hunting down a pirate-chief whose headquarters were in this island. The Chinese, however, held, until recently, a lien upon the place, requiring of the Portuguese 500 taels ground-rent, retaining also jurisdiction over their own people. The privileges obtained by England through the treaty of Nankin, were subsequently extended to the Portuguese, who, by successive aggressions, have become wholly independent of the Chinese. The anchorage at M. is defective; large vessels cannot approach nearer than six miles. After the rise of Hong-kong, the commerce of M. suffered severely. Some years ago, a suspicious trade in coolies sprung up; but 1873 the Portuguese govt. abolished the trade. Here Camoens, in exile, composed his *Lusiad*. The imports and exports have an annual value of \$7,500,-000. Tea is prepared and packed; there is much smuggling carried on; and the revenue is derived largely from the tax on the notorious gambling tables.—Pop. (1885) 67,030; 10,000 are Portuguese and other foreigners,

MACAQUE-MACARONIC VERSE.

MACAQUE, ma-kâk': quadrumana of family Simiadae, and of the section Catarhina or old-world monkeys. These animals form the genus Macacus. Their classification is somewhat confused.—See Rhesus Monkey: Wanderoo: Barbary Ape: Monkey: also Quadrumana.

MACARIANS, n. ma-kär'ĭ-anz: in chh. hist., the Monothelites of Antioch, so called from Macarius, patriarch at the time of the second Council of Constantinople, 620, at which he defended his opinions, but was condemned.

MACARONI, or MACCARONI, n. mäk'ä-rö'ni [O. It. maccaroni; It. maccheroni, a sort of paste, originally of flour, cheese, and butter—from maccare, to bruise or crush]: fine wheaten flour made into a paste and formed into long hollow tubes and baked; a medley; something ianciful and extravagant; a fool; a fine gentleman; a fop. MACARONIC, a. mäk'-rönaik, pertaining to or resembling macaroni; empty; trifling: see MACARONIC VERSE.—Macaroni, long peculiar to Italy, and almost to Genoa, is now made all over Italy, and at Marseille and other places in s. France. Strictly speaking, the name applies only to wheaten paste in the form of tubes, varying in diameter from an ordinary goose-quill to the size of an inch; but there is no real difference between M. and the fine threadlike vermicelli, and the variety of forms of Italian pastes used for soups. Only the hard kinds of wheat are applicable to this manufacture, containing a large percentage of gluten. The wheat is first ground into a coarse meal, from which the bran is removed—in that state it is called Semola (see also Semolina); during the grinding, it is necessary to employ both heat and humidity, to insure a good semola. The semola is worked into a dough with water; and for macaroni and vermicelli, it is forced through gauges, with or without mandrels, as in wire and pipe-drawing; or for pastes, it is roled out into very thin sheets, from which are stamped out the various forms of stars, rings, letters, The manufacture is of great importance to Italy, where it forms a large article of home consumption, and whence it is exported to all parts of the world. In Genoa alone, nearly 170,000 quintals of wheat are annually used for it. The finest qualities are those whitest in color, and which do not burst or break in boiling; it should swell considerably, and become quite soft; but if it does not retain its form when boiled, it has not been made of the best wheat. A few makers flavor and color it with saffron and turmeric, to suit certain tastes.

MACARONIC VERSE, māk'a-rŏn'īk: properly a kind of burlesque poetry, in which, with Latin, words of other languages are introduced with Latin inflections and construction; but the name is sometimes applied to verses merely a mixture of Latin and the unadulterated vernacular of the author, of which a very elever speci-

men are the lines of Porson on the threatened invasion of England by Bonaparte, entitled Lingo drawn for the Militia (see Wheatley's Anagrams, etc.). Teofilo Folengo, called Merlino Coccajo, learned and witty Benedictine of Mantua (1484-1544), has been erroneously regarded as the inventor of M. V.; but he was the first to employ the term with reference to the mixture in the dish called macaroni. His Maccaronea (Tusculanum 1521, and many editions) is a long satiric poem, in which Latin and Italian are mingled. Fortunately M. V. has not been extensively cultivated.

MACAROON, n. $m\ddot{a}k'\ddot{a}$ - $r\hat{o}n$ [F. macaron, a macaroon, a cake—from It. macarone, a macaroon]: sweet biscuit made of the meal of sweet almonds, white of egg, and powdered sugar. The most esteemed formula for making macaroons is either prepared almond-meal dry, or better, almonds just blanched and beaten into a paste, one lb., thoroughly incorporated with $1\frac{1}{2}$ lbs. of refined sugar in powder, an ounce of the yellow part of fresh lemon-peel grated fine, and the whites of six eggs. When thoroughly mixed, the paste is made into the shape of small flat oval biscuits, and placed on sheets of wafer-paper, and baked.

Macarthur, Arthur: an American military officer; b. in Massachusetts, 1845, June 1; served in the volunteer army during the civil war, attaining the rank of colonel; and was mustered out 1865, June 19. After the war he entered the regular army with the rank of lieutenant; was promoted captain, 1866, July 28; major, 1889, July 1; lieutenant-colonel, 1896, May 26; brigadiergeneral, 1900, Jan. 2; and major-general, 1901, Feb. 5. He served bravely in Indian wars; was assigned to the Department of Dakota; served in the war with Spain; and then was assigned to the Philippines; took a conspicuous part in the battle of Manila, and for his excellent service was promoted major-general of volunteers; became commander of the military division of the Philippines, 1901, and of the Department of the Lakes, 1902.

McARTHUR, mak-âr'thêr, Duncan: 1772, June 14—1839, Apr. 28; b. Dutchess co., N. Y.: soldier. He removed with his parents to w. Penn. when a boy; took part in the campaigns against the Indians in Ky. and O., 1790–94; settled near Chilicothe, O., and engaged in surveying; became member of the legislature 1805, maj.gen. militia 1808, col. 1st. O. vols. 1812, May 2; second in command at Hull's surrender at Detroit, brig.gen. U. S. A. 1813, Mar. 12; and commander of the army of the west 1814, May 31; and made an unsuccessful attempt to conquer Upper Canada 1814, Oct.—Nov. After the war he was member of the legislature 1815–21, speaker 1819, member of congress 1823–29, gov. 1830–32, and was defeated for re-election to congress by a single ballot 1832.

MACAR'THUR, JOHN: 1823, May 13—1890, Jan. 8; b. Bladenock, Scotland: architect. He removed to the

MCARTHUR-MACARTNEY COCK.

United States 1833: studied architecture and was a foreman in the construction of the Penn. hospital; became architect and supt. of the Philadelphia house of refuge 1848; was architect in charge of federal hospitals and other buildings in Philadelphia 1861–65; designed and superintended till his death the construction of the Philadelphia municipal building; and designed the new post-office building in Philadelphia, the U. S. naval hospitals at Philadelphia, Annapolis, and San Francisco, several Penn. state hospitals for the insane, Lafayette College, and three large hotels and the *Public Ledger* building in Philadelphia.

MCARTHUR, ROBERT STUART, D.D.: Baptist minister: b. Dalesville, Quebec, Canada, 1841; of Scotch descent. He graduated at Rochester (N. Y.) Univ. 1867, and at Rochester Theol. Seminary 1870; and then became pastor of Calvary Bapt. Church, New York. He is a diligent and faithful pastor and a vigorous administrator, genial in social intercourse and impressive in the pulpit; and his church has become one of the largest in the United States. He is editor of the Baptist Quarterly, and a frequent contributer to journals of his denomination.

MACART'NEY COCK (Euplocomus ignitus): splendid gallinaceous bird, called also the Fire-backed Pheasant, native of Sumatra and other islands of the same part of the world. It was described first in the account of Lord George Macartney's embassy to China 1792. The entire length of the adult male is about two ft. The sides



Macartney Cock (Euplocomus ignitus.)

of the head are covered with bluish-purple skin. The grown of the head has an upright crest of feathers with

naked shaft, and a number of slender spreading barbs at the tip. The tail, depressed, is forked; erect, it is slightly folded, as in the common fowl. The general color is a deep black, with blue metallic reflections; the middle of the back, brilliant orange; the tail, bluish green, orange, and white. The female is smaller, and almost entirely of rich brown color. The head is not crested, as in the male, but the hind feathers are lengthened.—The genus Euplocomus is allied both to Gallus (Fowl) and to Phasianus (Pheasant), and perhaps still more nearly to Lophophorus (Impeyan). Two or three splendid E. Indian species are referred to it.

MACASSAR, mâ-kâs'ser: most sonthern portion of the island of Celebes (q.v.), lat. 4° 35'—5° 50' s., long. 119° 25'—120° 30' e.; traversed by a lofty chain of mountains. M. was formerly the greatest naval power among the Malay states, but is now divided into the Dutch possessions, and M. Proper, which is of little importance and governed by a native king, who pays tribute to the Netherlanders. The natives are among the most civilized and enterprising, but also the most greedy, of the Malay race. They carry on a considerable trade in tortoise-shell and edible nests, grow abundance of rice, and raise great numbers of horses, cattle, sheep, and goats; fishing is also extensively carried on. The Macassars are chiefly Mohammedans; the mosques are of palmwood. They are warlike, spirited, and impatient of a blow—their laws allowing them to avenge it by the death of the offender, if within three days.

MACASSAR: chief town of the dist. of M. (q.v.). residence of the Dutch gov. and officials; on the Strait of M., which separates Celebes from Borneo; 5° 10' s. lat., 1196 20' e. long.; on a high point of land, watered by two rivers and smaller streams. It is surrounded by a stonewall, and further defended by palisades and Fort Rotterdam. The harbor is safe and convenient, but difficult to enter. The climate is healthful, and all kinds of provisions are plentiful. The exports consist of the various products of Celebes, brought from the settlements to M. for shipment: the chief are rice, sandal-wood, ebony, tortoise-shell, gold, spices, coffee, sugar, wax, coco-nuts, tobacco, opium, salt, edible nests, etc. Imports from China are principally silk fabrics and porcelain; from the Netherlands, cotton and linen goods, firearms, opium, spirits, etc. A very large proportion of the export and import trade is between Macassar and the free port of Singapore, about a third part being with Java. Annual imports amount to about \$500,000, and exports to the same value: no import or export duties are charged.— The Portuguese first formed a settlement in M., but were supplanted by the Dutch, who, after many contests with the natives, gradually attained supreme power. In 1811, M. fell into the hands of the British, who, 1814, defeated the king of Boni, and compelled him to give up the regalia of Macassar. In 1816, M. was restored to the

MACASSAR—MACAUCÔ.

Dutch, and shares the mercantile prosperity of the Netherlands' possessions in the Eastern Archipelago. Pop. about 20,000.

MACAS'SAR, STRAIT OF: between Borneo and Celebes, and connecting the Sea of Celebes with the Java Sea; length abt. 400 m., width 75-140 m. Rocks and shoals make its navigation difficult; also a strong current from n. to s. flows through it in Jan. and February.

MACASSAR OIL, ma-kăs'ser [from the district of Macassar, whence it is exported]: species of vegetable butter, of ashen-gray color, and rancid odor.—Macassar, in Europe and Amer., is an oil so named as if from Macassar. Anti-macassar, n. ăn'tĭ-, loose cover over a chair or sofa to prevent its being soiled, as by oil or grease from the hair of the head.

MACAU'CO: see LEMUR.

MACAULAY, ma-kaw'li, Thomas Babington, Lord: 1800, Oct. 25—1859, Dcc. 28; b. Rothley Temple, Leicestershire, England; son of Zachary M., W. India merchant and philanthropist, and grandson of the Rev. John M., Presb. minister in w. Scotland. He entered Trinity College, Cambridge, at the age of 18, where he acquired a brilliant reputation both as a scholar and debater. He twice won the chancellor's medal-first 1819, for a poer on Pompeii, again 1820, for another on Evening, both or which were published. In 1821, he obtained the second Craven scholarship, took the degree B.A. 1822, was shortly after elected a fellow of Trinity, and then applied himself zealously to literature. The periodical to which he first contributed was Knight's Quarterly Magazine; for this he wrote several of his ballads, e.g., The Spanish Armada, Moncontour, and The Battle of Ivry, besides essays and critiques. In 1825, he took the degree M.A., and in the same year made his appearance in the *Edinburgh Review* by his famous essay on Milton, the learning, eloquence, penetration, brilliance of fancy, and generous enthusiasm of which, quite fascinated the educated portion of the public. For nearly 20 years he was the popular, perhaps also the most distinguished, contributor to the 'Blue and Yellow.' In 1826, he was called to the bar at Lincoln's Inn, but it does not appear that he practiced. The tide of political agitation was rising high, and M. was borne along with the current. There can be no doubt that M. was an immense accession to the whig party; for he believed in whiggism with a profound sincerity that has never been questioned; and he was able to present the grounds of his belief in a manner so powerful and attractive, that his very opponents were charmed, and almost convinced. In 1830, he entered parliament for the pocket-borough of Calne (which was placed at his service by the Marquis of Lansdowne) in time to relieve him of pecuniary pressure; for his father, who had been deemed worth £100,000, met commercial disaster; his fellowship of £300 a year was to expire 1831, and a minor office yielding £400 a year was swept from him by a change in the ministry. Meanwhile his two sisters were dependent on him. M. was even in such straits that he had to sell his Cambridge gold medal. His entrance into parliament was also in time to take part in the memorable struggle for reform, in favor of which he made several weighty and effective speeches. When the first reformed parliament assembled 1832, M. sat as member for Leeds, and at once took a prominent position in the house. He was now made sec, of the board of control for India; and in the following year, went out to India as member of the supreme council, at a salary of £10,000 a year, of which he calculated to save £6,000. In India he remained till 1838. His chief labor was the preparation of a new Indian penal code. spicuous feature of this code was its humane consideration for the natives (which drew down on its author the

hostility of the Anglo-Indians). On his return to England, he resumed his political career, and was elected M.P. for the city of Edinburgh 1839. In 1840, he was appointed war-secretary. While holding office, he composed, appropriately, those martial ballads, the Lays of Ancient Rome (1842); and in the following year, published a collected series of his Essays, 3 vols. In 1846, he was made paymaster-general. M. had always been one of the most courageous and unflinching advocates of religious freedom: accordingly he had defended the Rom. Cath. Relief Bill; his first speech in the house of commons was in support of the bill to repeal the civil disabilities of the Jews, and now he supported the Maynooth grant. At this period, unfortunately for M., Edinburgh was the arena of great ecclesiastical ferment; and because he advocated a measure intended to moderate the natural discontent of Rom. Catholics, he was ousted from his seat at the general election 1847. Five years later (1852), Edinburgh did what it could in the way of reparation, by re-electing M. without a single movement made by him on his own behalf. In 1848, appeared the first two vols. of his History of England from the Accession of James II., the popularity of which must have made even successful novelists envious; next year, he was chosen lord-rector of the Univ. of Glasgow, on which occasion he received the freedom of the city. When the third and fourth vols. of his *History* were pub lished 1855, they occasioned a furor of excitement among publishers and readers, 'to which,' it is said, 'the annals of Paternoster Row hardly furnish any parallel.' Within a generation after the publication of his History, more than 140,000 copies were sold in Britain; besides vast numbers in the United States, and many editions in France and Germany. In 1857, the French Acad. of Moral and Political Sciences made him a foreign associate; and in the course of the same year, he was raised to the peerage of Great Britain under the the title Baron M. of His health, however, had long been failing, with irregularity of the heart's action, and in a little more than two years he died somewhat suddenly at his residence, Holly Lodge, Campden Hill, Kensington, London. He was buried in Westminster Abbey. Vol. V. of his *History*, a fragment, was published 1861, and a complete ed. of his works, by his sister, Lady Trevelyan, appeared 1866. The Life and Letters of Lord Macaulay, by his nephew, George Otto Trevelyan, M.P., a fascinating biography, was published 1876.

M. was indisputably a man of splendid talent, as well as of the purest sentiments and of an unvarying moral tone whether in private or in public life. As a social conversationist he was not excelled in his time. His scholarship—in the strictly classical sense of the term—was admirable; his miscellaneous literary acquisitions were prodigious; his knowledge of modern European, and especially of English history from the age of Henry

MACAULEY-MACAW.

VIII. down to his own, was unsurpassed—even unequalled; in addition, he had a sagacity and swiftness of understanding that enabled him to comprehend and rapidly methodize his vast array of facts; and with this he had a wonderful style glittering with rhetorical riches, and exhibiting the last degree of literary finish. In ease, purity, grace, force, and point, he rivals those who have made felicity of style their chief study. has been accused of partiality, of exaggeration, and of gratifying his passion for epigram at the expense of truth; his History has been termed a 'huge Whig pamphlet;' and strong exception has been taken to particular passages, where his views appear to some to be biased by personal antipathies, e.g., his description of Scotland, the Highlands, the massacre of Glencoe, Marlborough, Penn, etc.; but the essential truth and accuracy of his narrative, as a whole, have never been disproved. not, however, to be denied that his tendency was to an assured, unqualified, indisputable expression on points which might well have received more moderated utterance.

MACAU'LEY, CATHARINE E.: see MERCY, SISTERS OF.

McAU'LEY, JEREMIAH (JERRY): 1839-84: b. Ireland. He came to America at the age of 13, grew up in vice, became a professional thief, and for highway robbery was sent to Sing-Sing prison. Under the influence of a fellow convict who had become reformed and begun a Christian course, McA. also became a Christian convert. He received a pardon, and went to work in reforming his old associates in New York—opening a place called 'The Helping Hand for Men.' For several years, his daily and nightly meetings gathered multitudes of vicious men, to whom he preached and talked with utmost simplicity, and many of whom he won to Christian faith. In 1882 he established the 'Cremorne Mission' for degraded women. He was uneducated, but had a persuasiveness born of experience; and some of the most eminent people in New York, seeing the results of his work, became his constant helpers.

MACAW, n. mä-kaw' [word of unknown origin, possibly from the native name in Guiana or in the Antilles], (Macrocercus): genus of the parrot family (Psittacidæ), distinguished by a very long wedge-shaped tail, long and pointed wings, large strong feet, the sides of the head naked, the bill short and very strong, the upper mandible greatly arched, and having a long sharp tip, the lower mandible much shorter, and of massive thickness. The species, 15 or more, are among the largest and most splendid of the parrot race; all are natives of tropical America. They do not readily learn to articulate, their attainments seldom exceeding one or two words, but are easily domesticated, and become much attached to those with whom they are well acquainted. Their natural notes

MACAWFAT.

are hoarse and piercing screams. They are more or less gregarious, and the appearance of a flock of macaws in bright sunshine is wonderfully brilliant. They breed twice a year, and lay their eggs—generally two—in the hollows of decayed trees. They feed chiefly on fruits and seeds; and often commit great depredations on fields of maize. One of the flock is set to watch on some elevated situation, and on the approach of danger, gives the alarm by a cry. In domestication, macaws readily eat bread, sugar, etc.—The GREAT SCARLET M. (M. aracanya) is sometimes more than three ft. in length, including the long tail.—The GREAT GREEN M. (M. militaris) and the Blue and Yellow M. (M. ararauna) are rather smaller. These are among the best known spe-Allied to the macaws, but approaching to the parrakcets, are the species forming the genus Psittacara, The cheeks are feathalso natives of the new world. ered, and the bill less arched than in the true macaws. -Allied to them are also the Araras, of which one, the CAROLINA ARARA, OF CAROLINA PARROT (Arara Carolinensis), extends much further north in America than any other of the parrot family. It is about 14 inches



Macaw.

long, gay with green and gold, is gregarious, and commits great depredations in orchards and maize-fields. It cannot be taught to articulate words, but readily becomes very familiar.

MACAW-FAT: palm-oil obtained from the crushed fruit of Elāis guinĕĕnsīs, and E. melanōcŏc'că, ord. Palmæ.

MACAW-TREE-McCABE.

MACAW'-TREE, GREAT, or MACAW-PALM (Acrò-comia sclerocarpa): palm of the same tribe with the co-coa-nut; native of the W. Indies, and of the warm parcs of America. It is called Macoya in Guiana, and Macahuba in Brazil. It is 20 to 30 ft. high, with pinnated leaves 10 to 15 ft. long. The fruit yields an oil, of yellow color, of the consistence of butter, with sweetish taste, and an odor of violets, used, in the native regions of the tree, as an emollient in painful affections of the joints, and extensively exported to w. Europe, where it is sometimes sold as Palm Oil, to be used in the manufacture of toilet-soaps.

MACBETH, mak-beth' (or Macbeathad or Macbeda MAC FINNLAECH, as he is called in contemporary chronicles): King of Scotland (reigned 1040-57); d. 1057, Aug. 15; immortalized by the genius of Shakespeare. From his father, Finnlaech, or Finlegh, son of Ruadhri, he inherited the rule of the province of Moray; and he became allied with the royal line by his marriage with Gruoch MacBoedhe, granddaughter of King Kenneth MacDuff. In 1039, he headed an attack on King Duncan MacCrinan, at a place called Bothgouanan (the 'Smith's Bothy'), where the king was mortally wounded, but survived to be carried to Elgin, in Moray. M. then ascended the throne, and his reign of 17 years is commemorated in the chronicles as a time of plenty. He made grants to the Culdees of Loch Leven, and 1050, went in pilgrimage to Rome. Malcolm MacDuncan, or Ceanmore, eldest son of King Duncan MacCrinan, had fled to England on his father's death; and, in the summer of 1054, his kinsman, Siward, Earl of Northumberland, led an English army into Scotland against Macbeth. That king was defeated with great slaughter, but escaped from the field and still kept the throne. Four years afterward he was again defeated by Malcolm Mac-Duncan, and fleeing northward across the mountainrange since called the Grampians, he was slain at Lumphanan, Aberdeenshire. His followers were able to place his nephew, or step-son, Lulach, on the throne; and his defeat and death at Essie, in Strathbogie, 1058, Mar., opened the succession to Malcolm, who, three weeks afterward, was crowned at Scone. This is all that is certainly known of the history of Macbeth. fables which gradually accumulated round his name were systematized in the beginning of the 16th c. by the historian Hector Boece, from whose pages they were transferred to the Chronicle of Hollinshed, where they met the eye of Shakespeare. Nearly half a century before the great play was written, Buchanan had remarked how well the legend of M. was fitted for the stage.

McCABE, ma-kāb', Edward, d.d., Cardinal: 1816, Feb. 14—1885, Feb. 10; b. Dublin. He was educated at Maynooth College; ordained Rom. Cath. priest 1839; and became sec. to Cardinal Cullen, member of the Chapter

of Dublin, viear-gen., domestic prelate, member of the senate of the Royal Univ. of Ireland, bp. and asst. to Cardinal Cullen 1877, abp. of Dublin 1879, and cardinal priest 1882. He took strong grounds against the Irish 'Land League,' but his chief public work was in the educational institutions of the Rom. Cath. Church in Ireland, in which he did excellent service.

MACCABEES, n. plu. mäk'kä-bēz [doubtfully derived] by some from M. C. B. I., initial letters of the Heb. words signifying, 'Who is like unto Thee among the gods, O Jehovah?' which was their motto]: heroic Jewish family who freed their nation from the oppression and persecution of the Syrians, and restored the worship of the God of Israel, B.C. 164. MAC'CABEAN, a. -bē'an, pertaining to the Maceabees. Note.—Some, including Dean Stanley, derive the word from Heb. makkabah, 'a hammer,' giving a sense somewhat like that in which Charles Martel derived his surname from his favorite weapon; the family name of the Maccabees, however, was Asmonwans—see Smith's Diet. of Bible. — The founder of the Maccabean dynasty, MATITHJAHU (Asamonaios, Chashmonaj), a priest (not, as generally supposed, a high-priest, nor even of the family of highpriests), was the first who made a stand against the persecutions of the Jewish nation and creed by Antiochus Epiphanes. (His name is commonly written Mattathiah or Mattathias.) At the beginning of the troubles, he had retired, with his five sons, Jochanan (Gaddes-Kaddish), Simon (Tassi — Mathes), Jehudah (Makkabi), Eleazar (Avaran—Syr. Chavin), Jonathan (Apphus), to Modiin, a small place between Jerusalem and Joppa, to mourn in solitude over the desolation of the holy city and the desecration of the temple. But the Syrians pursued him thither. He being a person of importance, Apelles, a Syrian captain, endeavored to induce him, by tempting promises, to relinquish his faith, and to embrace the Greek religion. He answered by slaying with his own hand the first renegade Jew who approached the altar of pagan idolatry. This gave the sign to a sudden outbreak. His sons, with a handful of faithful men, rose against the national foe, destroyed all traces of heathen worship, already established in Modiin and its neighborhood, and fled into the wilderness of Ju-Their number soon increased; and they were able to make descents into the adjacent villages and eities, where they circumcised the children, and restored everywhere the ancient religion of Jehovah. At the death of Mattathiah, B.C. 166, a few years after the outbreak, JUDAH MAKKABI (B.C. 166-161) took command of the patriots, and repulsed the enemy notwithstanding his superior force, at Mizpah (6,000 against 70,000), Bethsur (10,000 against 65,000), and other places; reconquered Jerusalem, purified the temple (Feast of Reconsecration—Chanuka), and re-inaugurated the holy service B.C. 164. Having further concluded an alliance with the

Romans, he fell in a battle against Bacchides B.C. 161. His brother Jonathan, who succeeded him in the leadership, renewed the Roman alliance, and taking advantage of certain disputes about the Syrian throne, rendered vacant by the death of Antiochus, acquired the dignity of high-priest. But Tryphon, guardian of the young Prince Antiochus Theos, fearing his influence, invited him to Ptolemais, and had him there treacherously put to death. Simon, the second brother, was elected by the Jewish commonwealth as chief of the national govt., and was formally recognized both by Demetrius, Tryphon's antagonist, and by the Remans as 'chief and ruler of the Jews.' He completely re-established the independence of the nation, and the year after his suceession, B.c. 141, was made the starting-point of a new era. The almost absolute power in his hands he used with wise moderation; justice and righteousness flour-ished in his days, and 'Judah prospered as of old.' But only seven years after his accession to the supremacy. he was foully murdered, B.C. 136, by his son-in-law, Ptolemy, who vainly hoped to succeed him.—For the subsequent history of this family, see Jews: HYR-CANUS: HEROD. The Feast of the Maccabces-i.e., both of the sons of Mattathiah, and of the seven martyr children (II Mace. 7)—is in the Roman martyrology under the date of Aug. 1.

MAC'CABEES, Books of: certain apoeryphal writings of the Old Testament, treating chiefly of the history of the Maccabees (q.v.). They are usually divided into four parts, or books; the first of which—the most important comprising the period B.C. 175-135, relates the events which took place in Judæa; Antiochus IV. Epiphanes' misdeeds against the temple, the city, and the nation (i.-ii.); the rising of Mattathiah and his sons against the oppressor, the heroic deeds of Judah Maccabeus (iii.-x.), of Jonathan (ix.-xii.), and of Simon, until the election of Johannes Hyrcanus to the dignity The account, which bears the aspect of of high-priest. strict truthfulness, proceeds chronologically after the Seleucidian era. According to Origen and Jerome, this book was originally written in Hebrew. The author, probably a Palestinian, composed it partly from traditions, partly from official documents, after the death of Simon, during the high-priesthood of Johannes Hyrcanus, and it was shortly afterward translated into Greek, Syriac, and Latin. The second book contains— 1. Two letters from the Palestinian to the Egyptian Jews, inviting them to celebrate the feast of the Reinauguration of the Temple (Chanukah), (i.-ii.); and 2. An extract, with introduction and epilogue, from the five Books of the Maecabees, by Jason of Cyrene. second portion begins with the spoliation of the temple by Hesiodorus, under Seleucus Philopator, and ends with the death of Nicanor; thus embracing the period B.C. 176-161. The two letters are spurious, and of a

late date; and the extract from Jason's work—to a great extent, only an embellished repetition of the first Book of the M., of a partly moralizing, partly legendary nature—eontains many chronological and historical errors, and bears altogether the stamp of being written for merely didactic purposes. The date both of the original and the extract are very uncertain, but the latter does not seem to have been made before the middle of the first e. B.C.

These two Books (Sifre Chashmonaim) are the only Maeeabean books received in the Vulgate, and deelared canonical by the councils of Florence and Trent, and translated by Luther: they are among the Apoerypha in the English Bible. The third and fourth, however, appear to have been altogether unknown to the western The third treats of an anti-Maecabean incident: the miraeulous salvation of the Jews in Egypt whom Ptolemæus Philopator (B.C. 221-204) tried to force into idolatry. The style and general contents of this book point to an Alexandrine Hellenist as the author or compiler (about B.C. 200); some investigators (Ewald, Grimm), however, are of opinion that the whole is a poetical invention, intended as a typical description of the eireumstances of the Jews under Caligula. It is usually included in editions of the Septuagint; and, with the fourth and fifth books is found in the Syriae, but has no place in Latin Bibles. The fourth book, wrongly supposed to be identical with Josephus's Supremacy of Reason, eontains, ehiefly, the martyrdom of Eleazar and the seven brothers, and also is probably the work of an Alexandrine Jew living in Egypt—perhaps at the time of Herod the Great—and belonging to the Stoie school. Deelamations, dialogues, monologues, and the like, are frequent, and impart to the book the character of a most artificial and strained composition. It appears in some mss. of the Septuagint, notably in the Sinaitie and the Alexandrian (the Vatican codex does not contain any of the Maceabean books). There is also a so-ealled fifth book of M. found in the Polyglot; but only the Arabie and Syriac versions, not the Greek original—the unique ms. of which is supposed to have perished—are extant. See Apocrypha: Bible.

McCALL, ma-kawl', George Archibald: 1802, Mar. 16—1868, Feb. 26; b. Philadelphia: soldier. He graduated at the U. S. Milit. Acad. 1822; entered the army as 2d. lieut. of inf.; promoted 1st. lieut. 1829, eapt. 1836, maj. 1847; brevetted maj. and lieut.eol. for gallantry in the Mexican war; appointed inspector gen. and eol. U.S.A. 1850; and resigned 1853. In 1861, May, he was commissioned maj.gen. Penn. vols. and brig.gen. U.S.A.; eommanded the Penn. reserve eorps 1861–2; planned and executed the occupation of Dranesville 1861, Dec. 20; eommanded in the battle of Mechanicsville and defeated a superior force 1862, June 26; present at Gaines's Mill; was captured at Frazier's Farm June 30, and confined in Libby prison till exchanged Aug.; and resigned from the army through impaired health 1863, Mar. 31,

MACCALUBA-MCCHEYNE.

MACCALUBA, mâk-kâ-lô'bâ: interesting mud-volcano or air-volcano of Sicily, not far from the road between Girgenti and Aragona. It is known to have been in frequent activity for the last 15 centuries. It consists of a large truncated cone of barren argillaceous earth, elevated about 200 ft. above the surrounding plain, with wide cracks in all directions, and numerous little hill-ocks with craters, which at times emit a hollow rumbling noise, and throw up a fine cold mud mixed with water, a little petroleum and sulphureous gas. Reports like the discharge of artillery are occasionally heard; slight local earthquakes are felt, and mud and stones are thrown to a height of 30 ft. or more.

McCARTHY, mak-kâr'thĭ, Justin: author: b. Cork, Ireland, 1830, Nov. 12. He received a superior classical education; became a reporter on a Liverpool newspaper 1853, parliamentary reporter on the London Morning Star 1860, and its chief editor 1864; spent 1868–70 travelling, writing, and lecturing in the United States; became a radical leader writer on the London Daily News 1870; elected member of parliament 1879,80,85, and 86; and revisited the United States 1886–7. His publications include contributions to American and English reviews and magazines, and The Waterdale Neighbors (1867); My Enemy's Daughter (1869); Lady Judith (1871); A Fair Saxon (1873); Linley Rochford (1874); Dear Lady Disdain (1875); Miss Misanthrope (1877); Donna Quixote (1879); The Comet of a Season (1881); Maid of Athens (1883); and Camiola (1885), all novels; A History of Our Own Times, 2 vols. (1878–80); The Epoch of Reform (1882); and a History of the Four Georges, 4 vols. (1884–). He is a Home-Ruler, and chairman of the Irish parliamentary party, succeeding Parnell 1890, Dec. 6.

man of the established Church of Scotland: 1813, May 21—1843, Mar. 25; b. Edinburgh. He graduated with honors at the Univ. of Edinburgh, then studied theology at its Divinity Hall under Drs. Chalmers and Welsh; was Presb. minister two years at Larbert, and from 1836, Nov. 24 till death was pastor of St. Peter's Church, Dundee. In 1838 with impaired health, he was appointed to visit Palestine, and the account of his journey was published —Narrative of a Mission of Inquiry to the Jews from the Church of Scotland. Returning, his interest was drawn to great revival movements which he found in progress, and through his few remaining years he was abundant in that department of work. His Memoir and Remains prepared by his friend Andrew A. Bonar has had immense eirculation (116th Eng. ed. 1880) in England and America. McC.'s sermons show no special originality or intellectual power, but have a deep devotional glow and a saintly fervor that multitudes have found edifying. He wrote two or three hymns that have become favorites.

المفات

MACCHIAVELLI-McCLELLAN.

MACCHIAVEL'LI, NICOLO DI BERNARDO DEI: see Machiavelli.

McCLELLAN, mak-klel'an, George Brinton: soldier: 1826, Dec. 3—1885, Oct. 29; b. Philadelphia; son of George McC., cminent surgeon and one of the founders of Jefferson Medical College. In 1840 he entered the Univ. of Penusylvania; 1842 the Military Acad. at West Point; 1846 graduated second in a large class, Stonewall Jackson, Reno, Pickett, Maury, and Stoneman being among his classmates. As brevet second lieut, of engineers he aided in organizing a company of sappers and miners, with whom he proceeded to the scat of war in Mexico, 1846, Scp. He distinguished himself by his combined engineering skill and bravery at Vera Cruz, Cerro Gordo, Contreras, and the assault on the City of Mexico; was brevetted first lieut. at Contreras 1847, Aug. 20; and capt. at the capture of Mexico, 1847, Sep. 13. He was appointed to a professorship at West Point 1848, June 22; where he prepared a lecture on Napoleon's campaign of 1812, and in 1849-50 adapted Gomard's 'Manual of Bayonet Exercise' from the French, which was made part of the system of instruction. 1851-2 he assisted in the construction of Ft. Delaware; 1852, went with Capt. Marcy to the Red r., and surveyed the rivers and harbors of Texas; 1853, helped in the Pacific r.r. surveys. other important service he was made capt, of cavalry, 1855, Mar. 5, and sent with two others to Europe, during the Crimean war, to report on the military systems of Europe; his report on 'The Armies of Europe' was published by order of congress, 1861, Oct. He resigned from the army and became engineer, and afterward vicepres. of the Illinois Central r.r. In 1860 hc married Ellen Marcy, and became pres of the Ohio and Mississipppi r.r. When the civil war began he was made maj.gen. of the Ohio militia, and soon afterward appointed by Lincoln maj.gen. in the regular army. A brisk, successful campaign in W. Va. led to his appointment as commander of the department of the Potomac after the disastrous battle at Bull Run, 1861, July 21. He fortified Washington, reorganized the army, and matured comprehensive plans for crushing the rebellion. Delays in carrying these out made the people and administration In spring 1862 he invaded Va., advanced by impatient. the peninsula of the James r. near to Richmond, was defeated in a series of battles, and finally abandoned the campaign, and was virtually relieved of his command; but Pope being utterly defeated at the second battle of Bull Run, and Washington threatened, 1862, Aug. 29, he was again called to the command, once more reorganized the demoralized army, advanced against Lee, defeated him at Antietam, 1862, Sep. 17, and drove him back into Va., though he was criticised for allowing Lee's army to In Nov. the command was again taken from 1864 he consented to be the democratic candidate for the presidency against Lincoln. He received only

McCLERNAND-MACCLESFIELD.

21 electoral votes, Lincoln receiving 212. In 1865 he went to Europe, where he remained till 1868, when he returned to live in Orange, N. J. In 1870 he became chief engineer of the docks, New York, and supervised the construction of the Stevens battery. He was also pres. of the N. Y. Underground r.r., the U. S. Rolling Stock Co., and the Atlantic and Great Western r.r. In 1877 he was elected gov. of N. J., which office he administered with exceptional ability. He died at Orange of neuralgia of the heart, and was buried at Trenton, New Jersey.

McCLERNAND, mak-kler'nand, John Alexander: born 1812, May 30, Breckenridge co., Ky. On the death of his father, 1816, he removed with his mother to Shawneetown, Ill., on the Ohio r., where he passed his early youth working on a farm. In 1829 he began to study law, and 1832 was admitted to the bar. The same year he served as a private in the campaign against the Sacs and Foxes under Black Hawk, in which the Indians were defeated in a battle near the Wisconsin r., Aug. 2. Returning, he engaged in mercantile pursuits; 1835 he established the Shawneetown Democrat, and at the same time resumed the practice of law. He represented his district in the legislature 1836-40, and 1843 went to congress, serving until 1851, when he removed to Jacksonville. 1859, Dec. 5, he again went to congress, and served till the outbreak of the civil war, when he resigned, and with John A. Logan and Phil. B. Fouke raised the McClernand brigade, of which he was made commander, being commissioned brigadier-gen. 1861, May 17. He led his brigade at the battle of Belmont, 1861, Nov. 7, but was outnumbered and defeated. At the assault of Ft. Donelson, 1862, Feb., he commanded the right of the Federal forces; and on Mar. 21 was made maj.gen., and led his division at Shiloh, Apr. 6 and 7, when the Confederates under Johnston and Beauregard were forced to retreat. 1863, Jan. 4, he superseded Sherman in command of the expedition against Vicksburg, until relieved by Grant, the commander of the forces. Jan. 11 his command took Arkansas Post, with a number of prisoners and large quantities of commissary stores. May 12, he distinguished himself on the Big Black r.; and after the battle of Champion Mills, May 16, when in forcing back the Confederates upon the Big Black r., his corps and that of McPherson suffered heavily. The Confederates lost 17 guns, and were forced to retreat to Vicks-McC. led the 13th army corps until relieved, 1863, July, and resigned his commission, 1864, Nov. 30, and retired to private life. He died 1900, Sept. 30.

MACCLESFIELD, māk'lz-fēld: important manufacturing town of Cheshire, England; on the river Bollin, on the w. base of a range of low hills, 15 m. s.s.e of Manchester. It contains a fine old church, St. Michael's, founded 1278; and a grammar-school, endowed 1502, with annual revenue £1,500. Within the present century,

McCLINTOCK.

M. has prospered as a seat of manufactures: silks, embracing the finest varieties, are the principal fabrics made; cotton goods and small-wares are manufactured, and there are dye-works and breweries. In the vicinity, coal, slate, and stone are obtained. Pop. (1871) 35,570; (1881) 37,620; (1891) 36,009.

McCLINTOCK, ma-klin'tok, Sir Francis Leopold, D.C.L., LL.D., F.R.S.: British naval officer: b. Dundalk, Ireland, 1819. He entered the British navy 1831; was promoted lieut. 1845, accompanied Sir James Clarke Ross on the Arctic expedition in search of Sir John Franklin 1848; went with Capt. Horatio Allen on a similar expedition 1850, and besides discovering traces of the Franklin party made a sledge journey of 750 m. along the n. shore of Parry Sound; was promoted commander 1851; commanded the *Intrepid* in Sir Edward Belcher's expedition 1852, rescued Capt. M'Clure and his companions after three years' imprisonment in the ice near Melville Bay, made a sledge journey of 1,210 m. into the unexplored region n. of Melville Bay, and had to abandon his own vessel. He was promoted capt. 1854. In 1857 he commanded the search expedition fitted out by Lady Franklin, and discovered a record announcing the death of Sir John Franklin and the abandonment of the Erebus and Terror. On his return he was knighted and otherwise honored. He was commodore of the Jamaica station 1865-68; naval aide to Queen Victoria 1868-71; rear-admiral 1871; admiral-supt. Portsmouth dockyard 1872-77; vice-admiral 1877; commander-in-chief N. American and W. Indian stations 1879-82; and full admiral 1884.

McCLINTOCK, mak-klĭn'tok, John, d.d., ll.d.: 1814, Oct. 27—1870, Mar. 4; b. Philadelphia. Graduating from the Univ. of Pennsylvania 1835, he was ordained a minister of the Meth. Episc. Church; was prof. in Dickinson College of mathematics 1837-40, of classics 1840-48; ed. of Methodist Quarterly Review 1848-56; in 1857, delegate to the Wesleyan Meth. conference in England, and to the Berlin meeting of the Evangelical Alliance; 1857-60. pastor St. Paul's Methodist Episc. Church, New York; 1860-64, pastor American Chapel, Paris, and corresponding ed. of the *Methodist*. In 1864-65 he was again pastor of St. Paul's, New York, resigning because of ill-health; and from 1867 till death he was pres. of the new Drew Theol. Seminary, Madison, N. J. Dr. McC. was deemed the leading scholar in his denomination; he was an admirable preacher, and socially genial and attractive. He was joint founder and editor of McC. and Strong's Cyclopedia of Bib., Theol., and Eccles. Literature (9 vols. Harper & Bros.), of which 3 vols. were issued before his death. Among his writings are: Analysis of Watson's Theol. Institutes, New York (1842); Temporal Power of the Pope (1855); and several translations of important works. Since his death, have been issued his sermons entitled Living Words (New York 1871, 2d ed.); Lectures

McCLOSKEY—M'CLURE.

on Theological Encyclopædia and Methodology (Cincinnati 1873). He wrote much also for periodicals.

McCLOSKEY, ma-klŏs'kĭ, John, d.d., Cardinal: 1810, Mar. 20—1885, Oct. 10; b. Brooklyn. N. Y. He was educated in the Rom. Cath. college and seminary at Emmettsburg, Md.; ordained priest 1834; studied two years in the Gregorian College at Rome, Italy; appointed first pres. of St. John's College, Fordham, N. Y., 1841; consecrated bp. of Axiere and made coadjutor to Bp. Hughes, of New York, 1844; installed first bp. of Albany 1847; abp. of New York 1864; and appointed cardinal-priest 1875, Mar. 15. He completed for use and dedicated St. Patriek's Cathedral on Fifth ave., 1879, May 25, and celebrated his golden jubilee 1884, Jan. 12. He was the first cardinal of the Rom. Cath. Church in America.

M'CLURE, ma-klūr', Sir Robert John le Mesurier: discoverer of the Northwest Passage: 1807, Jan. 28-1873, Oct. 17; b. Wexford, Ireland. He was sent for education first to Eton, afterward to Sandhurst. Intended for the military profession, but having no love for it, he secretly left Sandhurst, and through the good offices of a friend, was entered as a midshipman on board the Victory. He volunteered for the Arctic expedition in H.M.S. Terror, Capt. Back, 1836, returning to England 1837. In 1837, Nov. he received his commission as lieut.; and 1842, June 18, was appointed to command the Romney resciving-ship at the Havana, where he remained until the early part of 1846. In 1848, he joined Sir James Ross's expedition in search of Franklin; and on its return 1849 was promoted to commander. expedition had barely returned to England when it was resolved by the admiralty to dispatch the vessels composing it—viz., the Enterprise and the Investigator—on a fresh search for the Franklin party by way of Behring's Accordingly, Capt. Richard Collinson, c.B., was appointed as senior officer to the Enterprise, and Commander M. to the Investigator. 1850, Jan. 20, the vessels set sail, with instructions to speed their way to Cape Virgins, in order to arrive at Behring's Strait in The Investigator could not keep up with the Enterprise, which was towed through the Strait of Magellan by a steamer, some time before the Investigator arrived there. After rounding Cape Horn, the Investigator met her consort lying at anchor in Fortescue Bay; but soon again they separated, and met no more during the voyage. Captain M. now proceeded alone, in the Investigator, toward the northern ice-regions. Aug. 2, after passing through Behring's Strait, he spied, lat. 72° n., ice ahead. On the 8th, his men first met Esquimaux, close to Point Pitt, where a party was sent ashore to erect a cairn, and place a notice of the *Investigator* hav-These Esquimaux encouraged them in the belief that, as they proceeded eastward, they would find an open channel. As they proceeded, however, along the n. coast of America, the ice became troublesome and

C.M.

There were also numerous shoals, even threatening. which made navigation intricate and dangerous. Aug. 31, the Investigator reached Cape Bathurst, from which she advanced n.e. for several days. Sep. 11, unmistakable signs of winter presented themselves. On the 17th, the Investigator reached her most advanced position, lat. 73° 10′ n., and long. 117° 10′ w., about 30 m. from the waters of that series of straits called Melville, Barrow, and Lancaster, communicating with Baffin's Bay. ice now almost hemmed the vessel in on every side; and Captain M. determined to winter in his present position. The Investigator became finally fixed in the ice, lat. 72° 50' n., and long. 117° 55' w. Oct. 22, Capt. M. determined to reach the sea, if possible, by a sledge-journey. He accordingly set out with a party of men and officers, and after sustaining much fatigue and privation, was at last rewarded, on the 26th, by a sight of the North-'The position of Mount Observation, west Passage. from which the important discovery had been made, was ascertained to be in lat. (observed) 73° 30′ 39″ n., long. 114° 39′ w., and by lunar 114° 14′ w.' After this discovery, the party returned to the *Investigator*; but that vessel was not destined herself to sail homeward through the passage discovered by her commander. All that winter and spring, she remained frozen up in the ice. In July, she began to move again; but the nearest she could get to the passage was 73° 43′ 43" n. lat., and long. 115° 32′ 30″, 25 m. from the waters of Barrow Strait, 1851, Aug. 15. On the following day, Commander M. resolved to abandon this course, go round the s. end of Banks' Land, and endeavor, by passing westward of it, to reach Melville Island by that route. For 300 m. and more, the Investigator sailed in this direction, without being once checked by ice. Aug. 19, however, a sudden change came; the ice pressed against both sides of the vessel, and immense masses threatened to topple over, and sink her with their weight. By Sep. 1, the Investigator became completely ice-bound about 50 yards from the shore. On the 10th, however, there was another change; the ice broke from the coast, carrying the Investigator with it, and she slowly sailed along for several days, until eventually she settled in a bay, where Commander M. resolved to winter. To this bay he gave the name of Bay of Mercy, in gratitude for the escape of the ship and crew from numerous dangers, as also because the neighboring land abounded in reindeer, hares, and other animals, which gave them good supply of food. In this bay, they passed their second Christmas, and the time were on until 1852, Apr., when Commander M. visited Melville Island with a sledge-party, in hope of finding some of Capt. Austin's ships, or at least a dépôt of provisions; but was disappointed. He returned to the vessel, where all were still well; but in May, the scurvy broke out among his crew, and increased during the summer. August came, and still there was no open

channel, and in the following month, it became clear that they must pass a third winter in the ice. became necessary to decide what they should do for the future, as provisions were failing: accordingly, Commander M. announced to his men that, in the following April, he would send away 30 of the erew to make their way homeward in two parties—one by way of N. America up the Mackenzie River; the other by way of Cape Spencer, Beechey Island; while he himself, with the remainder of the officers and crew, would stay by the ship, spend a fourth winter, and then, if not relieved, endeavor to retreat upon Lancaster Sound. The men cheerfully acquiesced; and when April came, the sledges were got ready for the retreating parties. On the 6th of that month, Commander M. and his first-lieut. were walking near the ship conversing, when they perceived a figure rapidly approaching the rough ice at the entrance of the bay. When within a hundred yards of them, he shouted and gesticulated, but without enabling them to guess who it could be. At length, he came up to them, and to their joy and astonishment, announced himself thus: 'I am Lieut. Pim, late of the Herald, and now in the Resolute. Capt. Kellett is in her at Dealy Island.' Pim had come from Melville Island, in consequence of one of Captain Kellett's parties having discovered an inscription left by Commander M. on Parry's famous sandstone rock in Winter Harbor. Commander M. now resolved. though reluctantly, to abandon his ship altogether, and return with Captain Kellett to England. He reached England 1854, Sep. 28. His first reward was to receive his commission of post-captain, dated back to the day of his discovery of the Northwest Passage. Shortly afterward, he received from her majesty the honor of knighthood. A reward of £10,000 was also granted to the officers and erew of the Investigator, as a token of national approbation of the men who had discovered a Northwest Passage from the Pacific to the Atlantic Oeean. In March 1856, Sir Robert M. was appointed to command H.M. steam-corvette Esk, serving in the E. Indies and China, which returned to England 1861.

McCOOK, ma-kûk', Alexander McDowell: soldier: b. Columbiana co., O., 1831, Apr. 22; son of Maj. Daniel McC. He graduated at the U.S. Milit. Acad. 1852; entered the army as brev. 2d lieut. 3d U.S. inf.; was several years engaged against hostile Indians in N. M.; asst. instructor of inf. tactics in the U.S. Milit. Acad. 1858-61; was promoted 1st lieut. 1858; appointed col. 1st O. vols. 1861, Apr.; brevetted maj. U.S. A. for gallantry at the first Bull Run; promoted brig.gen.vols. 1861, Sep. 3; commanded a division of the Army of the Ohio at Shiloh and Corinth, the 1st army corps at Perrysville, 20th army corps at Stone River and Chickamauga, the troops defending Washington 1864, July 11-12, and the dept. of e. Ark. 1865; was brevetted lieut.col. U.S. A. for services at Nashville 1862, Mar. 3, col. for Shiloh Apr. 7, brig.gen. for Perrysville 1865, Mar. 13, and maj. gen. U.S. A. for field service during the war the same day; and promoted maj.gen.vols 1862, July 17. In 1867, Mar., he was promoted lieut.col. U.S. A.; 1880, Dec., col. 6th U.S. inf.; 1890, July 11, brig. gen. U.S. A.; 1894, Nov. 9, maj. gen. U.S. A. His father and 9 brothers served in the Union army, the father and 3 brothers were killed in action, and 4 of the brothers became generals. D. 1903.

McCOOK', Anson George: soldier: b. Steubenville, O., 1835, Oct. 10; son of John McC. He received a common-school education, was admitted to the bar 1861; entered the army as capt. 2d O. inf.; was in the first Bull Run battle; became col. of his regt. and afterward of the 194th O.; commanded a brigade in the Atlanta campaign and the Va. valley; and was brevetted brig.gen. vols. for services in the field. He was assessor of internal revenue in Steubenville 1865-73; member of congress from New York 1877-83; and is (1890) sec. of the U. S. senate.

McCOOK', Edward Moody: soldier: b. Steubenville, O., 1833, June 15; son of John McC. He received a common-school education; was admitted to the bar and settled in Colo. to practice; entered the regular army 1861, May 8, as 2d lieut. 1st cav.; was brevetted 1st lieut. for Shiloh 1862, capt. for Perrysville 1862, maj. for Chickamauga 1863, lieut.col. for cav. operations in e. Tenn. 1864; col. for Selma, Ala., and brig.gen. for field service during the war 1865; and was promoted brig.gen.vols. 1864, and maj.gen.vols. 1865. He distinguished himself by his effective cav. raids. Resigning his army commission 1866, he was appointed U. S. minister to the Hawaiian Islands, and held the office till 1869; and was gov. of Colo. Terr, 1869-73.

ألله معمور الله ا

McCOOK-McCOSH.

McCOOK', John: 1806, Feb. 21—1865, Oct. 11: b. Can. onsburg, Penn.: physician. He graduated at the Cincinnati Medical School; practiced in New Lisbon and Steubenville, O., and served during a part of the civil war as a volunteer surgeon and nurse. He had five sons in the Union army, and his brother, Daniel M. (1798, June 20—1863, July 21), had ten sons in the army, and was himself killed near Buffington's Island, O., while leading a detatchment to intercept Morgan and his raiders.

McCORMICK, ma-kawr'mik, Cyrus Hall: 1809, Feb. 15—1884, Mar. 13; b. Walnut Grove, Va.: manufacturer. He received a common-school education; invented two plows 1830, and the first practical reaping-machine ever made 1831; removed to Cincinnati 1845, and to Chicago 1847, where he built extensive works and began manufacturing reapers; received numerous prizes and medals for his machine; and was awarded the grand prize of the Paris exhibition, appointed officer of the Legion of Honor, and elected corresponding member of the French Acad. of Sciences for his great aid to agriculture, 1878. He founded the Presb. Seminary of the Northwest in Chicago with \$100,000 (1859), and afterward endowed a chair in Washington and Lee Univ., Lexington, Va.

MeCOSH, ma-kŏsh', James, d.d., ll.d.: b. Carskeoch, Ayrshire, Scotland, 1811, Apr. 1. He studied at Glasgow Univ., 1824-29, and at Edinburgh Univ., under Dr. Thos. Chalmers, 1829-34. At the latter place he received the honorary degree of A.M., on motion of Sir Wm. Hamilton, for his essay on the Philosophy of the Stoies. 1835 he was ordained minister of the Church of Scotland at Arbroath; but 1839 removed to Brechin; and, 1843, was aetive in organizing the Free Church of Scotland. There he also wrote his work on Methods of the Divine Government, Physical and Moral, published 1850, at Edinburgh, which aroused wide attention, and gained for him the professorship of logic and metaphysics in Queen's College, Belfast, and the degree of LL.D. from Aberdeen. held this position 16 years, attracted many students, and actively defended the national system of education in Ireland. Meanwhile he added to his reputation as a thinker, by writing, jointly with Dr. Geo. Dickie, Typical Forms and Special Ends in Creation, 1856; and by his Intuitions of the Mind Inductively Investigated, 1860; and The Supernatural in Relation to the Natural, 1862. Elected president of the College of N. J., at Princeton, 1868, he removed to the United States. The recent great prosperity of that institution is largely owing to him: 1868, he removed to the United States. At that time the college of N. J., recently renamed Princeton University, was suffering from the intense feeling which the civil war had caused. All of the students of Southern parentage had withdrawn from the institution, but under his able direction the roll of students and professors nearly quadrupled, and the endowment was increased by several million dollars. Dr. McC. was much beloved by his associates and pupils. The recent great prosperity of that institution is largely owing to him

the number of professors having been increased from 17 to 41, and the average number of students from 264 to 603 (1888). In 1868 he received the degree LL.D. from Harvard, and Lit. D. from Queen's College, Ireland. 1887, Nov., he tendered his resignation as president of Princeton to take effect 1888, and devoted himself Besides the works already menanew to authorship. tioned, and many contributions to the Princeton Review and other periodicals, he has published An Examination of Mill's Philosophy, etc. (1866); The Laws of Discursive Thought, etc. (1869); Christianity and Positivism (1871); The Scottish Philosophy, Biographical, Expository, Criti-cal (1874); A Reply to Prof. Tyndall's Belfast Address (1875); The Development Hypothesis (1876); The Emotions (1880); his Philosophical Series, including some of his best known works, like Certitude, Providence, and Prayer (1883), Psychology: the Cognitive Powers (1886), and others, was commenced 1882 and completed 1886. He published The New Departure in College Education (1885); Realistic Philosophy (1887) combining his Philosophical Series in 2 vols., to which was added Psychology: The Motive Powers (1887); and The Religious Aspects of Evolution (1888). He d. 1894, Nov. 6.

M'CRIE, mak-krē', Thomas, d.d.: 1772, Nov.—1835, Aug. 5; b. Dunse, Berwickshire: Scottish divine and historian. He studied at the Univ. of Edinburgh, and was ordained 1795 pastor of an Anti-Burgher congregation in that city. M.'s works are highly valuable to the student of Scottish ecclesiastical history. They exhibit a vast amount of minute yet important research; and though they are essentially apologetic, the author is never consciously unfair, and does not misstate facts. He has, however, a way of palliating even the indefensible acts of the Reformers, and a zeal for Presbyterianism, that caused the impartial Hallam to describe his spirit as Presbyterian Hildebrandism. M.'s best known works are The Life of John Knox (Edin. 1812; new ed. 1855–57), and The Life of Andrew Melville (1819).

M'CULLOCH, mak-kŭl'loh, Horatio: 1806-67; b. Glasgow. Scottish landscape painter. He exhibited first, 1829. In 1836 he was elected an associate of the Scottish Acad. Two years afterward he was elected a member of the Royal Scottish Acad., and removed to Edinburgh, where he died. M. painted the Highlands with unrivalled truth, breadth, and imagination. Among his principal pictures are Highland Loch, Lochan-Eilan, View in Cadzow Forest, Dream af the Forest, Misty Corries, Deer Forest, Isle of Skye, Loch Achray, Mist Rising off the Mountains, Kilchurn Castle, Loch Awe, and Bothwell Castle, on the Clyde.

McCULLOCH, mak-kŭl'loh, Hugh: financier: b. 1808, Dec. 7, Kennebunk, Me. He entered Bowdoin College at the age of 16, but left without graduating, on account of failing health, and taught school 1826-29, after which he studied law. He removed to Fort Wayne, Ind., 1833,

where after 2 years he was made cashier of the branch of the State Bank of Ind. in Ft. Wayne, from which office he was 1856 elected to that of pres. of the Bank of the State of Ind., which he held until 1863, May, when he resigned, to accept the appointment of comptroller of the currency offered him by Salmon P. Chase, who had newly created this bureau. 1865, May, Pres. Lincoln appointed him sec. of the treasury in place of William P. Fessenden, a position which he held until 1869, Mar. 4. He raised the necessary money to pay off 500,-000 soldiers and sailors in less than 6 months; and in 2 yrs. put the debt of the country into satisfactory shape, turning \$1,000,000,000,000 of short-time obligations into funded debt. He favored the national bank system, and the early resumption of specie payments. In 1869 he retired from the treasury, and became one of the banking firm of Jay Cooke, McCulloch & Co., London, 1871-78; and was again appointed sec. of the treasury, 1884, Oct., upon the resignation of Sec. Gresham, which office he held till the expiration of Pres. Arthur's term, 1885, Mar. 4. After that he lived in Washington, D. C., and on his farm in Maryland, contributing various articles on financial subjects to the magazines, the N. Y. Tribune, and other journals, some of which attracted wide atten-He d. 1895, May 24.

MACCUL'LOCH, John, M.D.: geologist and physician: 1773, Oct. 6—1835, Aug. 21; b. in the island of Guernsey; of a Scottish family. He studied medicine at Edinburgh, became asst.-surgeon to an artillery regiment, was employed by govt. 1811 in geographical and scientific researches in Scotland; 1820 became physician to Prince Leopold of Saxe-Coburg, afterward king of the Belgians; and in his latter years was prof. of chemistry and geology in the E. India Company's milit. school at Addiscombe. His most important works are Description of the Western Islands of Scotland (3 vols. Lond. and Edinb. 1819); A Geological Classification of Rocks, with Descriptive Synopses (Lond. 1821); A System of Geology, with a Theory of the Earth (Lond. 1831); Malaria—an Essay on the Production and Propagation of this Poison (Lond. 1827); and An Essay on the Remittent and Intermittent Diseases (2 vols. Lond. 1828).

M'CUL'LOCH, John Ramsay: 1779, Mar. 1—1864, Nov, 11; b. at Isle of Whithorn, Wigtonshire, England: distinguished political economist. He became known first in connection with the Scotsman newspaper and the Edinburgh Review. He was a contributor to the former, soon after its establishment 1817, and for a considerable time was its editor. He made his début in the latter 1818, by an article on Ricardo's Principles of Political Economy, and continued for about 20 years to write for the Review, contributing to it almost all the economical articles with a few on other subjects. M.'s numerous published volumes rendered good service at a critical period of transition. His treatment of great questions was not original, nor was it elevated above the usual material-

MACDONALD.

istic level; still on that level it was scientifically wrought; and his statistical works specially noted below, show arduous research, scientific arrangement, and fidelity to facts. L.'s style is criticised as lacking literary finish, and his mode in writing as dogmatic: in private life he was beloved. His principal publications comprise: The Principles of Political Economy; The Literature of Political Economy (valuable work of reference); Treatises and Essays on Money, Exchange, Interest, the Letting of Land, Absenteeism, etc.; On the Succession to Property vacant by Death; On the Rate of Wages; A Dictionary of Commerce (of high value); Statistical Account of the British Empire (of high value); Geographical Dictionary; A Treatise on Taxation and the Funding System, etc. 1828, M. was chosen prof. of political economy in Univ. College, London; and 1838 he was appointed comptroller of II.M. stationary office, a situation which he held till his death. M. was a foreign associate of the Institute of France; and Peel conferred on him a pension of £200 a year.

MACDONALD, mâk-do-nâl', ÉTIENNE-JACQUES Jo-SEPH-ALEXANDRE, Duke of Taranto, Marshal and Peer of France: 1765, Nov. 17—1840, Sep. 24: b. Sancerre, dept. of Cher; descended from a Scotch family which followed James II. to France. M. embraced the cause of the Revolution, entered the army as a lieut., and rapidly rose to high military rank. In 1798, he was intrusted with the govt. of the Roman States, but was compelled to evacuate them by the superior force of the enemy. In 1799, he defeated the Austrians at Modena, and was defeated on the Trebbia by a superior Austrian and Russian force under Suwarrow. As commandant of Versailles, he rendered very important service to Bonaparte in the revolution of 18th Brumaire; and 1800,1, he chased the Austrians from Switzerland and the Tyrol; but after honorably filling important political posts, he lost the favor of Bonaparte by his honest support of the cause of Moreau. In 1809, he was summoned by the emperor to take the command of the right wing of the army of Italy under Eugène Beauliarnais, and took Lai-He greatly distinguished himself at the battle of Wagram, and on the field of battle become reconciled to Napoleon, who, for his services on that day, created him marshal and duke. He held a command in Spain 1810, afterward in the Russian campaign; 1813, he defcated the Prussians at Museburg, and contributed to the success of the battles of Lutzen and Bautzen, but was subsequently defeated by Blücher at the Katzbach. the battle of Leipzig, he was employed in covering the retreat of the French army, and saved himself only by swimming the Elster. In the subsequent struggles on French ground, between the Marne and Scine, M. made desperate efforts; but when he saw that further resistance was hopeless, he advised the emperor to abdicate. The Bourbons made him a peer, and gave him the command of a military division; and on Napoleon's return

McDONALD-MACDONALD.

from Elba, it fell to his lot to oppose his progress to laris. All his troops went over to Napoleon, but he himself accompanied Louis XVIII. in his flight; and though he returned to France, he refused to serve during the Hundred Days. After the second restoration, he was continually loaded with honors of every kind, but consistently maintained, in the chamber of peers, the principles of constitutional liberty. He died at his seat of Courcelles, near Guise.

McDONALD, mak-dŏn'ald, Flora: 1720-1790, Mar. 4; b. Milton, South Uist, Hebrides. In 1746 she assisted Charles Edward Stuart, the 'young Pretender'—then a wanderer after his defeat at Culloden—in escaping from his hiding-place on the island of South Uist to Skye, whence he made his way to France. When her act became known she was imprisoned on naval vessels and in London till the Indemnity Act 1747. She married Allan McD. 1750, emigrated to Fayetteville, N. C., 1774, aided the loyalist cause at the beginning of the revolutionary war, and after many dangers returned to the island of Skye, where she died. She was a woman of great beauty, ease and dignity of manner, and personal courage; and her service to 'Prince Charlie' is a favorite theme of Scottish song and story.

MACDON'ALD, GEORGE, LL.D.: preacher, poet and novelist: b. Huntly, Aberdeenshire, Scotland, 1824, Dec. 10. He was educated at Aberdeen Univ., and Highbury Independent College, London, with a view to the Congl. ministry. He remained three years in his first charge of Arundel, Sussex; removing next to Manchester, he gave up preaching through delicate health. He afterward settled down to a literary life in London, connecting himself with the Church of England, and has since preached occasionally and lectured on literary subjects. A civil list pension of £100 was conferred upon him 1877. He visited the United States 1872,3, lecturing, and preaching in a few pulpits. In poetry, he has issued Within and Without (1356); A Hidden Life (1864); and The Disciple (1867). He has contributed to the periodical literature of the day, is a master in the art of writing fairy stories, and has issued a long series of novels and imaginative works, of which the most important are: David Elginbrod (1862); Alec Forbes of Howglen (1865); Annals of a Quiet Neighborhood (1866); Seaboard Parish, and Robert Falconer (1868); Malcolm (1874); St. George and St. Michael (1875); Marquis of Lossie (1877); Sir Gibbie (1879); Warlock of Glenwarlock (1882). He has issued also Unspoken Sermons (1839), and The Miracles of our His novels convey much practical reli-Lord (1870). gion.

MACDON'ALD, Sir John Alexander, D.C.L., Ll.D.: 1815, Jan. 11—1891, June 6; b. Scotland; statesman. He removed to Kingston, Canada, with his father 1820; was educated at the Royal Grammar-school; admitted to the bar 1835; elected to the provincial parliament 1844; ap-

MCDONALD-McDOUGALL.

pointed queen's counsel 1846; commissioner of crown lands 1847-50; atty.gen. of Canada 1854-62; minister of militia 1862-64; atty.gen. 1864-68 and minister of militia 1865-68; member of the house of commons 1867-78; minister of justice 1868; premier 1869-73; re-elected member of the house 1882 and 87; and again premier 1886. M. was a member of the joint high commission for the settlement of the Alabama claims 1871; was honored with a call to the privy council of Great Britain 1872; was created knight commander of the Bath (civil) 1867 and received its grand cross 1884; and received the degree D.C.L. from Oxford Univ. and Trinity College, Toronto, and Ll.D. from Queen's Univ., Kingston, and McGill Univ., Montreal.

MCDON'ALD, Joseph Ewing: 1819, Aug. 29—1891, June 21; b. Butler co., O.; lawyer. He removed to Montgomery co., Ind., 1826; was apprenticed to the saddler's trade; studied two years at Asbury Univ.; was admitted to the bar 1844; and began practicing in Crawfordsville 1845. In 1848 he was elected member of congress as a democrat, and 1850 was defeated; 1856 was elected atty.gen.; 1859 established himself in Indianapolis; 1864 was defeated as candidate for gov.; 1872 chairman state democratic committee; and 1875–81 U.S. senator. He is a hard-money, protective-tariff democrat, and his name was conspicuous among candidates for the democratic presidential nomination 1880 and 84.

MACDONOUGH, mak-dŏn'oh, Thomas: 1783, Dec. 23–1825, Nov. 16; b. Newcastle co., Del.: naval officer. He entered the U. S. navy as midshipman 1800; became lieut. 1807, master commander 1813, and capt. 1814; served with Com. Preble in the war against Tripoli 1803–4; and with a force of 14 vessels, 86 guns, and 850 men defeated a British squadron under Capt. George Downie who had 16 vessels, 95 guns, and 1,000 men, on Lake Champlain off Plattsburg 1814, Sep. 11.—For this victory he was promoted capt., given a gold medal by congress and an estate overlooking the scene of the battle by the state of Vt., and otherwise honored. He subsequently commanded the Mediterranean squadron, and died at sea while returning home.

McDOUGAL, mak-dô'gal, DAVID: 1809, Sep. 27-1882, Aug. 7; b. O.: naval officer. He entered the U. S. navy as midshipman 1828; became passed midshipman 1834, lieut. 1841, commander 1857, capt. 1864, commodore 1869, and rear-admiral on the retired list 1873; commanded the Wyoming of the Asiatic squadron 1861-64; fought six land batteries and three war vessels at Shimonoséki, Japan, 1863, July 16, sinking one vessel, exploding the boilers of the second, and crippling the third; commandant navy yard, San Francisco 1865-6; commander Powhattan 1868-9; and commander s. squadron Pacific fleet 1870.

McDOU'GALL, ALEXANDER: 1731-1786, June 8; b. island of Islay, Scotland: soldier. He accompanied his

parents to America 1755; commanded the privateers Barrington and Tiger in the Old French war 1756; engaged in mercantile business in New York; was imprisoned by the royal authorities for issuing a patriotic address which the assembly voted to be libellous; was active in pre-revolutionary movements; and was appointed col. 1st. N. Y. regt. 1776, June 30. He was promoted brig.gen. 1776, Aug., and maj.gen. 1777, Oct. 20; served with the army till 1780, when he entered the continental congress, where he was minister of the marine a few months; resigned his seat and returned to the army 1781; and was elected to the N. Y. senate 1783 and to congress 1784.

McDOWELL, mak-dow'el, IRVIN: 1818, Oct. 15-1885, May 4; b. Columbus, O.: soldier. He received a collegiate education in France; graduated at the U.S. Milit. Acad. 1838; entered the army as 2d. lieut. 1st. U. S. artil.; was adjt. and asst. instructor of inf. tactics at the U. S. Milit. Acad. 1841–45; aid to Gen. Wool, and adjt.gen. of his div. in the Mexican war; was brevetted capt. for Buena Vista, and promoted capt. and asst. adjt.gen. 1847, May 13; brevetted maj. 1856; and on duty in the adjt.gen.'s dept. till 1861. Early in 1861 he was engaged in inspecting, organizing, and mustering troops in Washington; was appointed brig.gen. May 14, and assigned to command the dept. of n.e. Va., and the defenses of Washington s. of the Potomac; appointed commander of the Army of the Potomac (composed of raw recruits) May 29; and commanded in the first battle of Bull Run July 21. He was soon afterward relieved by Gen. Mc-Clellan; given command of the 1st. corps, Army of the Potomac; and promoted maj.gen. vols. 1862, Mar. 14. In Aug. following he became commander of the 3d. army corps, and with it fought at Cedar Mountain, Rappahannock Station, and the second Bull Run; and Sep. 6 was relieved from field service, and was refused his request for a court of inquiry into his conduct at Bull Run. was pres. of several army boards and courts 1863; commanded dept. of the Pacific 1864-5; dept. of Cal. 1865-68; brevetted maj.gen. U.S.A., and mustered out the vol. service 1866, Sep. 1; commanded dept. of the East 1868-72; was promoted maj.gen. U.S.A. 1872, Nov. 25; commanded div. of the South 1872-76; div. of the Pacific 1876–82; and retired 1882, Oct. 15.

MACE, n. mās [F. masse, a lump, a club—from a supposed L. matěă, a beetle, preserved in the dim. mateŏla, a beetle, a mallet: It. mazza, a mallet or club]: the insignia of authority in the form of a strong, short staff or club, generally surmounted by a crown, borne before high officials, in some countries, as mayors, lord provosts, the speaker of the British house of commons, the lord chancellor, etc.: anciently, a weapon of war in the form of a club with a spiked metal ball at the end, a favorite weapon with knights and with some cavalry, also with fighting priests who were by canon law forbidden to use the sword; the weapon could deliver a terrible blow:

MACE-MACEDONIA.

also, the heavy rod used at billiards. MACE-BEARER, or MACER, r. mās'er, an officer who carries the mace before persons in authority. In Scotland they are officers who have the duty of keeping the silence of a court.

MACE, n. mās [F. macis—from L. macis, a spice]: a spice; the Aril (q.v.) or second coat of the Nutmeg (q.v.). In the fruit, it is within the fleshy part, and envelops the nut. It is a lacerated membrane, blood-red, and somewhat fleshy when fresh. It is prepared for market by drying for some days in the sun, and flattening. has a peculiar, strong, agreeable smell and taste, and contains a clear, yellow, volatile oil, and a red, buttery, fixed oil. The volatile oil is obtained from it by distil-The buttery oil, obtained by expression, mixed with the volatile oil and other substances, is known as Nutmeg Balsam. Mace is used as a spice, and has much of the flavor of the nutmeg. It is of bright orange-yellow color, and peculiar wax-like texture. It is imported chiefly from Penang and Singapore, where it is received from the Spice Islands. Small quantities are sent also from the W. Indies, where its cultivation receives some attention.—The aril of species of Myristica, different from the true nutmeg, and coarse and inferior, sometimes appears in commerce as mace. MACE-ALE, a liquor flavored with mace.

MACEDONIA, măs-e-dō-nĭ-a: anciently, a country n. of Thessaly. Originally of small extent, embracing only the dist. Emathia, it gradually extended until, in the time of Philip, father of Alexander, it reached, on the n., the Scardian Mountains, a portion of the Hæmus (mod. Balkan) range; on the w., the frontiers of Epirus and Illyria; on the e., the river Nestos (mod. Karasu); and on the s., Thessaly. The country as a whole is mountainous, especially in the s. and w., but there are several large plains of great fertility. The principal rivers were the Strymon, Axius, and Haliacmon. was famous among the ancients for its gold and silver mines, and productiveness in oil and wine. It contained a number of flourishing cities well known in ancient history, particularly Pella (the cap.), Pydna, Thessalonica, Potidea, Olynthos, Philippi, and Amphipolis. The Macedonians are believed by some to have been originally an Illyrian race, but this is not probable. Their language, though different from, was yet allied to that of Greece. The fact, however, that it employed words not used by the Greeks, but preserved in Latin, leads to the inference that the ethnological connection between Greece Proper and Macedon belonged to an extremely remote period. The Macedonians were certainly not pure Hellenes, nor did the ancients so consider them; but they may be regarded as ruder members of the Grecian nation, whose early development had been hindered. history of M. is involved in much obscurity till about B.c. 490, when the Persians subdued it, so that the Macedonian king, Alexander I., was compelled to take part with Xerxes in his invasion of Greece. On the retreat

MACEDONIANS.

of the Persians after the battle of Platea B.C. 479, M. recovered its independence. Under the wise and vigorous reign of Archelaus (d. B.C. 399), it greatly increased in prosperity and power; but after his death, a period of civil wars and contests for the throne ensued, which ended in the accession of Philip II. B.c. 359, who not only seated himself firmly on the throne, but knew how to develop the resources of his kingdom, and so to direct the warlike spirit of his subjects as greatly to extend his dominions. His son, Alexander III., surnamed Alexander the Great (q.v.), brought half the then known world under his empire; but after his death, the Macedonian empire was broken up, and at the end of 22 years of incessant wars, formed into four principal kingdoms under his greatest generals. M. itself fell to the lot of Antipater, after whose death ensued another period of civil wars and contests for the throne, of which the Greeks endeavored to take advantage for recovery of their ancient independence. But the Athenians having called in the assistance of the Romans against Philip V. of M., by whom their city was besieged, the Macedonians were defeated by the Romans in the great battle of Cynocephalæ B.c. 197, and both Greece and M. became subject to the Roman power. Perseus, successor of Philip, was finally defeated at Pydna B.c. 168, and adorned the triumph of Æmilius Paulus. An attempt of the Macedonian nobles to shake off the oppressive yoke of the Romans having also been defeated, and the nobles driven into exile, M. became (B.C. 148) a Roman province, in which Thessaly and part of Illyria were included. After the time of Constantine, the country was ravaged by Slavic tribes; by the 7th c., the old semi-Greek Macedonians were extinct; and in the later ages of the Byzantine empire, their place was supplied by colonies from Asia, many of them of Turkish descent. See Finlay's Medieval Greece.

MACEDO'NIANS: party or sect which arose in the church toward the close of the Arian controversy, and took their name from Macedonius, who became patriarch of Constantinople 341, and whose administration, beginning with force, was marked by turbulence and by his persecution of adherents to the Nicene Creed, and ended with his deposition by a council 360. He died soon Their distinctive doctrine was the denial of the divinity of the Holy Spirit. In the early stage of the Arian question, the subject of the Holy Spirit attracted no special notice, being equivalently involved in the great dispute regarding the Son. Later it emerged as the subject of fierce discussion. Macedonius taught that the Holy Spirit was 'unlike to the Father and the Son in substance, and a creature.'—Socrates, Eccl. Hist. ii. 46. As a member of the semi-Arian party, he had been opposed by the Arians. His party was a considerable one, no fewer than 36 bishops having appeared attached to it at the council of Constantinople 381. doctrine, nevertheless, was condemned in that council,

MACEDONIUS-MACERATE.

in which also was added to the Nicene Creed the special clause by which the divinity of the Holy Spirit is defined. The M. subsisted as a distinct party so late as the time of Theodosius.—They are called also *Pneumatomachi*, or 'Adversaries of the Spirit.'

MACEDO'NIUS, Patriarch of Constantinople: teacher of a heretical doctrine regarding the Holy Spirit: see Macedonians.

McENTEE, măk' ên-tē Jervis: 1828, July 14-1891, Jan. 27; b. Rondout, N. Y.; painter. He studied with Frederic E. Church 1850-51; engaged in business in Rondout; exhibited at the National Acad. of Design 1853; and established a studio in New York 1858. In 1860 he was elected an associate of the National Acad.; 1861 an academician; and 1869 made a sketching and studying tour of Europe. His paintings include The Melancholy Days have Come (1860); Indian Summer (1861); Late Autumn (1863); October Snow (1870); Sea from Shore (1873); Cape Ann (1874); A Song of Summer (1876); Winter in the Mountains (1878); Clouds (1879); Kaatskill River (1881); Autumn Memory (1883); The Kaatskills in Winter (1884); Christmas Eve (1885); and Shadows of Autumn (1886).

MACERATA, mâ-chā-râ'tâ: province of e. Italy, on the coast of the Adriatic. It is mountainous, and unfertile except in valleys and level districts. The Apennines traverse it. Pop. (1881) 239,713; (1890) est. 242,201.

MACERA'TA: walled town of central Italy, cap. of the province of M. (formerly a delegation). It is finely situated in the midst of hills, on a lofty eminence, 22 m. s.w. of Ancona, and commands picturesque views of the sea and the Apennines. The streets are straight and well paved, and there are some fine public edifices, including a cathedral with some good paintings, six minor churches, and numerous conventual establishments. The Palazzo Comunale, or town-hall, is a beautiful building of the 13th c. M. has a university of high repute, and is a centre of intellectual and social Italian life. Pop. 11,000.

MACERATE, v. măs'er-āt [L. macerātus, softened by steeping—from macer, lean, thin: It. macerare; F. macerer, to macerate]: to mortify; to inflict corporal hardships; to make lean; to steep in any cold liquid for the purpose of softening the texture, or of extracting the soluble portion; to steep almost to solution. Mac'erating, imp. Mac'erated, pp.: Adj. steeped in a cold liquid. Mac'erated, pp.: Adj. steeped in a cold liquid. Mac'erator, n. -ā-ter, one who macerates. Mac'eration, n. -ā'shān [F.—L.]: the act of wasting or making lean; mortification; corporal hardship; the process or operation of softening or extracting the soluble portion of anything by steeping in a cold liquid, as water. Note.—Infusion is performed by pouring a hot liquid over a substance, as tea; decoction, by boiling a substance in a liquid.

MACFARREN-MACGAHAN.

MACFARREN, mak-făr'en, Sir George Alexander, MUS. D.: musical composer: b. London, 1813, Mar. 2; son of a dramatic author and musician. His education was conducted at the Royal Acad. of Music, where he became prof. 1834. As an operatic composer, Dr. M. was the most characteristic representative of the national English school—his aim being to revive the old English music in modern opera. His earliest dramatic work, The Devil's Opera, was produced 1838; Don Quixote followed 1846; King Charles II. 1849, which first brought out Louisa Pyne in English opera. Other works were followed 1860 by the opera Robin Hood, which attained a popularity far beyond its predecessors, and was performed during a whole season to overflowing houses. After other operas, the oratorio John the Baptist appeared 1873. His works comprise various other pieces, also contributions to the literature of music. His Rudiments of Harmony were published 1860; Six Lectures on Harmony 1867. In 1875, he became principal of the Royal Acad. of Music, and prof. of music at Cambridge Univ. He was knighted 1883. He d. 1887, Oct. 31.

MacGAHAN, măk-gā'an, Januarius Aloysius: journalist: 1844, June 12-1878, June 9; b. New Lexington, O. When he was 7 years old his father died, leaving him to work on the farm. He attended school in winter, till 1860; then taught school for two terms. In 1860 he went to Huntington, Ill., as bookkeeper, and 1864 to St. Louis. Here he wrote for the Huntington Democrat, gave readings from Dickens, and studied law. 1869, Jan., he went to Europe, visiting London, Paris, and other cities, and spending several months at Brussels in the study of civil and international law, and French and German. In 1870 he was made special correspondent of the N. Y. Herald, overtook Bourbaki's retreating army in the Franco-German war, and went to Lyons and Bordeaux, whence he sent reports of interviews with the republican, monarchical, and clerical parties' leaders. Next he went to Paris, remaining during the Commune, and sending graphic reports of the events there; arrested by the nationalists, he was released through the intercession of U.S. Minister Washburn. He visited Bucharest, Odessa, Yalta, and accompanied the czar's court to St. Petersburg. In 1872 he went with Gen. Sherman to the Caucasus; made reports of the Alabama conference at Geneva; gathered news from London, Paris, Lyons, and other places; married a Russian lady 1873, Jan.; and then hastened after the Russian expedition to Khiva, where he arrived just as the bombardment began. turning to Europe he published Campaigning on the Oxus. and The Fall of Khiva (London 1874). 1874, July, he reported the Carlist war in the Pyrenees; remained with Don Carlos 10 months, and gained perfect command of Spanish. 1875, June, he sailed for the Polar Sea, and on his return published *Under the Northern Lights* (London 1876). 1876, June, the London Daily News sent him to investigate the alleged Turkish barbarities in Bulgaria,

McGEE-McGILLIVRAY.

With Eugene Schuyler, sent by the U. S. govt., he made a thorough examination of the desolated districts, and wrote a vivid account confirming the reports of the Turkish inhumanities, thereby enlisting British sympathy for the Christians in Turkey, and causing all hindrances to the intervention of Russia to be removed. His letters were republished in a pamphlet, *Turkish Atrocities in Bulgaria* (London 1876). The next winter he went to Constantinople to report the conference of the ambassadors there; and then to St. Petersburg to watch the preparations for war. Though injured by an accident, he went with the Russian army, saw the first battle with the Turks, and the crossing of the Danube. Again wounded by another accident, he yet went to the front, and remained with Gen. Skobcleff, though four times ill with malarial fever. Remaining at Pera during the negotiations of San Stefano, while an epidemic of spotted fever was raging, he took the disease and died from it. As a reporter he was audaciously enterprising, persevering, and fearless, yet judicious and faithful; his writings were brilliant, forcible, and full of vivid description; his newspaper work attracted wide attention in all parts of the civilized world. His early death was greatly deplored.

McGEE, ma-gē', Thomas D'Arcy: 1825, Apr. 13—1868, Apr. 7; b. Carlingford, Ireland: statesman. He received a good education, removed to Boston 1842, and became editor of the Pilot; returned soon afterward to Ireland. and was made Parliamentary reporter for the Freeman's Journal, Dublin, and an editor of The Nation, the Young Ireland party's organ; and fled to New York 1848. spent two years there in editorial work; become a royalist 1856; established the New Era newspaper in Montreal; and was elected a member of the Canadian parliament 1857. He was pres. of the executive council 1864-67; drew up the plan for the union of the British N. American provinces; was minister of agriculture 1867; and having severely denounced the Fenian agitation was assassinated after leaving the parliament building at Ot-His publications include History of the Irish Settlers in America (Boston 1851); History of the Attempts to Establish the Protestant Reformation in Ireland (1853); Catholic History of North America and Historical Sketches of O'Connell and his Friends (1854); Canadian Ballads (1858); Popular History of Ireland (1862); and Speeches and Addresses on the British American Union (1865).

McGILLIVRAY, mak-gil'i-vrā, Alexander: Creek Indian chief: 1740-1793, Feb. 17; b. in the Creek Nation, Ala.; son of Lachland McG., of Scotland, and a half-breed Creek princess, who was daughter of a French officer. He received a classical education in Charleston; then returned to his tribe; became the autocratic leader of the Creeks, Seminoles, and Chickamaugas; aided the British through the revolutionary war; became an ally of the Spanish gov. of w. Fla.; raided the American settlements frequently; and finally made a treaty with Washington

MACGILLYCUDDY REEKS-MACHAIRODUS.

in New York 1790. He was polished, shrewd, and treacherous, and was at the same time a British col., an American maj.gen., and a Spanish general.

MACGILLYCUDDY REEKS, mak-gil-i-kūd'i rēks: highest mountains in Ireland, forming a group in the w. of county Kerry, and rising from the w. shores of the Lakes of Killarney, to the beauty of which their lofty heath-covered summits add an element of grandeur. The Reeks cover about 28 sq. m.; and Carran-tual, loftiest peak, is 3,404 ft. in height.

McGLYNN, mak-glin', EDWARD, D.D.: Rom. Cath. priest, and social reformer: b. 1837, Sep. 27, New York. He was educated in the public schools of New York and studied theology at the College of the Propaganda, Rome, receiving the degree D.D. after public examination. In 1860 he was consecrated to the priesthood, and on his return to America was made hospital chaplain and assistant pastor, on Father Cumming's death taking his place at St. Stephen's 1866. He soon incurred the disfavor of the Rom. Cath. authorities by declaring that the public schools were good enough for Rom. Cath. children, and by his unwillingness to establish a parochial school in connection with his church. He also on public occasions made remarks favoring Henry George's land theory, for which he was censured by the archbishop. Upon his persisting in the expression of his views, he was summoned to appear at the Vatican, and on ignoring this command, was excommunicated. Early in 1887 he was made president of the Anti-poverty Society, of which he was one of the founders, and delivered Sunday evening lectures before that body in the Academy of Music in New York. He also lectured in many other American cities, and published numerous articles, advocating his economic theories. He had warm feeling, was eloquent in address, and had many devoted adherents. He died 1900, Jan. 7.

McGREADY, mak-grā'dī, James: Presbyterian minister: b. prob. abt. 1760, Penn., under whose labors in s.w. Ky. a revival of religion arose which ultimately led to the formation of the Cumberland Presb. Church (q.v.). His removal to Ky. was in 1796, after he had labored for a time in N. Carolina.

MACHÆRUS, mā-kē'rŭs: fortress of great natural and artificial strength, in Peræa, 9 m. e. of the n. end of the Dead Sea; mentioned by Josephus as the place of imprisonment and beheading of John Baptis; by Herod. It was built by Alexander Jannæus, and was on a high point with deep ravines on all sides.

MACHAIRODUS, n. mä-kī'rō-düs [Gr. machaira, a sabre; odous, a tooth]: in geol., genus of carnivorous mammals found in certain Tertiaries and bone-caves of Europe—so called from the trenchant, sharp-pointed, and sabre shape of its upper canines.

MACHALE-MACHERY.

MACHALE', John, D.D.: archbishop of Tuam: 1789 (or 91), Mar. 15-1881, Nov. 7; b. Tuber-na-Fian, Mayo, Ireland. He graduated at St. Patrick's College, Maynooth, 1814, and was ordained priest; prof. of theol. there 1820-25; coadjutor bp. of Killala 1825-34; abp. of Tuam and metropolitan 1834 till his death. In the Vatican Council 1869-70, he was opposed to the dogma of infallibility, but submitted as soon as it was definitively adopted. Dr. MacH. was a patriotic Irishman, urging the Rom. Cath. Emancipation acts, working with O'Connell for repeal, pressing for separate schools for Rom. Catholics, and stoutly opposing all work of Prot. mission societies among his flock. He built in his diocese a cathedral (at Killala), and built or repaired 100 churches, and established many parish schools and convents. He was a man of literary acquirements, published translation of part of Homer's Iliad (Dublin 1861), Irish translation of about 60 of Moore's Melodies, Catechism of Doctrine in English and Irish, Evidences and Doctrines of the Catholic Church (1827), Book of Prayers, revised Irish version of the Pentateuch from 200 years ago (1863).—See his Life and Times, by U. J. Bourke (New York 1882).

McHEN'RY, James: 1753, Nov. 16—1816, May 3; b. Ireland: statesman. He received a classical education; removed to Philadelphia about 1771; studied medicine with Dr. Benjamin Rush; went with Washington to Cambridge, Mass., and joined the army as asst. surgeon 1776, Jan. He was soon appointed medical director, and also served as surgeon of the 5th Penn. battalion. He was captured by the British at Fort Washington; exchanged 1778; became sec. to Washington that year; and 1780–83 was on Lafayette's staff. In 1781–86 he was a member of the Md. senate; 1783–86 of congress; 1787 of the federal constitutional convention; and 1796–1801 sec. of war. Fort McHenry, near Baltimore was named in his honor.

MACHER'Y: see ALWUR.

MACHIAVELLI.

MACHIAVELLI (or MACCHIAVELLI), må-kē-å-věl'lē, Niccolo di Bernardo dei: 1469, May 3—1527, June 22; b. Florence; of an ancient but decayed family. He was pupil of the celebrated scholar, Marcello Virgilio, was employed in public affairs from a very early age, and may be regarded as the literary representative of the political life of the important period to which he belongs. From a subordinate post in the office of the chancellor of Florence, which he held at that critical period of the republic which succeeded the expulsion of the Medici 1493, he rose, 1498, to the place of secretary of the 'Ten,' which, in the Florentine constitution of that day, may be regarded as the ministry of foreign affairs. M.'s duties were almost entirely diplomatic; he was employed in a great variety of missions, the instructions and correspondence connected with which may be said to contain the secret political history of Italy during his time. The culminating-point of M.'s reputation as a diplomatist was his mission to the great master of treachery and dissimulation, Cæsar Borgia, Duke of Valentino 1502, of which an account is preserved in 52 letters written during the course of the negotiation, not surpassed in dramatic interest by any series of state-papers ever produced. In the complicated external relations which Italy had now assumed, and which have remained with few changes to the present day, M. is found in communication with all the great foreign powers, as he had hitherto been with the Italian principalities. In 1507, he was sent to Emperor Maximilian; and 1510, he undertook a mission to France (his third diplomatic visit to that country), which had a most important bearing on the relation of France with Italy, and the results of which will be best understood by comparing the league of Cambrai with the subsequent alliance for the expulsion of the French from Italy. On the restoration of the Medici 1512, M. was involved in the downfall of his patron, the Gonfaloniere Soderini. He was arrested on a charge of conspiracy 1513. On being put to the torture, he disclaimed all knowledge of the alleged conspiracy; but though pardoned, in virtue of the amnesty ordered by Leo X., he was compelled for several years to withdraw from public life, during which period he applied himself to literature. It was not till the death of Lorenzo de' Medici, 1519, that M. began to recover favor. was commissioned in that year, by Leo X., to draw up his report on a reform of the state of Florence; and in 1521 and following years, he resumed his old official occupation, being employed in various diplomatic services to several states of Italy. On his return to Florence 1527, May, he was taken ill, and having trusted to his own treatment of himself, the malady proved fatal. Some difference of opinion has existed as to his religious belief, and as to his sentiments during his last hours; but it seems certain that his death was accompanied by the ordinary ministrations of his church. His last years, however, were comparatively neglected. He was buried

MACHIAVELLI.

in the family vault in the church of Santa Croce; but it was not till 1787, and then through the munificence of a foreigner, Earl Cowper, that a monument was raised to

his memory.

M.'s writings are very numerous, filling 6 vols. 4to (Florence 1783), or 10 vols. Svo. Besides his letters and state-papers, which are of the highest interest, his historical writings comprise Florentine Histories, extending from 1215 to 1492, with fragmentary continuation to Discourses on the First Decade of Titus Livius; a Life of Castruccio Castracani (unfinished); a History of the Affairs of Lucca. His literary works comprise comedies, an imitation of the Golden Ass of Apuleius, an essay on the Italian language, and several minor compositions. He wrote also Seven Books on the Art of War, admired by the learned in military science. But the great source of his reputation for good or for evil, is the celebrated book De Principatibus, or, as it has been called, Del Principe, some knowledge of which is indispensable to a just appreciation of the author. The main question discussed in this world-famed book is: 'How principalities may be governed and maintained?' In resolving this question, various cases are supposed, for each of which, appropriate rules, principles, and suggestions are laid down, all illustrated both by contemporary examples and by a wealth of historical learning which it is difficult to overrate. The 7th chapter, in which he details, with evident admiration, the system of Cæsar Borgia, and the 18th, in which he discusses 'the duty of princes as to the obligation of keeping faith,' are perhaps those which have most contributed to draw upon the author the odious reputation of which his very name has become the symbol; but, in truth, these chapters are only more precise and more formal than the rest, from their heaping together statements elsewhere insinuated or supposed; the broad scheme of the book being everywhere the same, viz., that, for the establishment and maintenance of authority, all means may be resorted to; and that the worst and most treacherous acts of the ruler, however unlawful in themselves, are justified by the wickedness and treachery of the gov-Such being the moral of the book, a question has arisen as to the intention of the writer, and a favorite theory for a time prevailed, that The Prince was but a satire on absolutism, and was designed to serve the cause of liberty, of which M. was an ardent friend, by making arbitrary power odious and contemptible. This theory, however, besides being utterly irreconcilable with the tone of the work, is completely disproved by a letter of M. to his friend Vettori, 1513, discovered 1810, and which shows that The Prince was written by M. in all seriousness, in order to recommend himself to the Medici (for whose private perusal it was designed, and not for publication) as a master in the art of govern-In his ardor for the liberation of Italy from the rule of foreigners, M. had become convinced that strong

MACHIAVELLIAN-MACHINE:

native governments, even though absolute, must be endured; and; having accepted that of the Medici for Florence, he was content to use all means for its security and consolidation. The Prince was published, after M's death (Rome 1532); and if any doubt be entertained as to the seriousness of the author, the work need only be compared with the commentary furnished by every page of his Legazioni, or the reports of his diplomatic missions, also contained in his collected works. Of the many criticisms and rejoinders to which The Prince has given occasion, the most remarkable is that of Frederick the Great, Antimacchiavelli, ou Examen du Prince de Macchiavelli, 1740. The Prince was condemned by Pope Clement VIII. See Villari's great work on M. (1880–82).

MACHIAVELLIAN, a. māk'ī-ā-vē'lī-ān [after Machia-velli, famous political writer of Florence, Italy, 15th c.]: denoting the doctrines of Machiavelli, who taught the principles of expediency as distinguished from right in his system of politics or statesmanship; cunning or crafty in politics and government: N. one who adopts the principles of Machiavelli. Machiavellism, n. -vēl-izm, political cunning and artifice intended to advance arbitrary power.

MACHICOLATED, a. mā-chĭk'ō-lā-tĕd [mid. L. machicolamen'tum, machicolation: F. machicoulis, machicolation—from F. mèche, a match; couler, to flow: OF. coulis, flowing]: in anc. fortifications, having apertures between the corbels supporting a projecting parapet, through which pitch and offensive missiles might be thrown as from a sort of gallery upon the besiegers below: such pierced parapets were common over gateways, towers, etc. Machicolations, n. plu. māch'ī-kō-lā'shūnz, projecting galleries in castellated buildings, or properly, the apertures above noted. The act of throwing missiles from such parapets is sometimes called Machicolation.

MACHINAL, MACHINATE: see under Machine.

MACHINE, n. mă-shēn' [F. machine—from L. machina; Gr. mēchănē, a contrivance, a stratagem, a machine: It. machina]: any contrivance or thing which serves to increase or regulate the effects of a given force, as steam, water, or wind; a complex structure or instrument contrived to lessen or supersede human labor; an engine; a coach or light conveyance; in kinematics, a combination of resistant bodies so arranged that, by their means, the mechanical forces of nature can be compelled to do work, accompanied by certain determinate motions (see MECHANICAL POWERS). MACHINING, n. mä-shē'ning, the working off newspaper or book sheets from a steam-MACHINERY, n. mä-shē'nėr-i, the works or component parts of a machine; machines in general (see MECHANICAL POWERS: also, MACHINERY, POLITICAL ECONOMY of): complicated routine or management, as of government. MACHINAL, a. mä-shē'nāl, pertaining to

MACHINE-ENGRAVING---MACHINE GUN.

machines. Machinate, v. māk'i-nāt, to plan or contrive; to form a scheme; to plot. Mach'inating, imp. Mach'-inated, pp. Mach'inator, n. -nā-tēr, one who contrives a scheme for an evil purpose. Machination, n. māk'i-nā'shūn, a plot or scheme formed for some evil purpose; an artful design. Machinist, n. mā-shē'nīst, a constructor of machines; one skilled in the use of machines. Machine-work, work done by a machine in contradistinction to that done by manual or hand labor.

MACHINE'-ENGRAV'ING: process in recent years superseding, in whole or in part, the manual operations of the engraver. The first step was the invention of the ruling-machine by Wilson Lowry for engraving plain backgrounds, skies, or any other portions where the work was purely mechanical. The saving of labor was very great, and the work satisfactory. But what is properly denominated M.-E. is executed wholly by machinery. This department consequently excludes all artistic work, and is generally restricted to the engraving of patterns, bank-notes, etc. For the engraving of bank-notes, several very complex machines have been invented. The Americans particularly are distinguished in M.-E.; and to Jacob Perkins of Mass. is due the introduction of the bank-note engraving-machine. Perhaps the most perfect machine is that invented by Wagner of Berlin, called the 'Universal Rose Engine, or Guilloche Machine,' which consists of a number of machines capable either of separate or of combined action, the number of distinct instruments being co-extensive with the number of species of lines composing the pat-The number and arrangement of the different instruments can be so varied, that a practically unlimited number of patterns may be obtained, and the correctness and delicacy of these patterns can hardly be surpassed.

MACHINE GUN: a term applied to the entire class of weapons whose characteristic features are rapidity and immense multiplicity of discharge. At first it was applied only to guns using small-arm ammunition; now it includes revolving cannon like the Hotchkiss and the Driggs Schroeder guns. Among the earliest and best known of this class of weapons is the Gatling gun (q.v.), consisting usually of a cluster of 10 barrels, fastened together, and each having its own lock, which is released as it passes the proper point in the revolution of the barrels. They are revolved by the turning of a crank, while the cartridges, with leaden musket-balls, are fed into a drum, or rack, which places them in grooves in front of the locks, by which they are pushed into the chambers. As many as 1,200 shots per minute have been fired from it. The *Gardner gun* is much like the Gatling, only that its barrels do not revolve, but the locks move instead. The Maxim gun is automatic in its action. After the first discharge, its recoil and that of each succeeding one is utilized for the further operation of the gun, opening the breech, extracting the

MACHINERY.

empty shell, taking a fresh cartridge from the cartridge belt and putting another in its place for the next discharge, cocking the gun, inserting the cartridge into the chamber, and then firing the piece. All the operator need do is to pull the trigger once; after that the gun will load and discharge itself, while he can give his attention to directing the aim as the movements of the enemy require. As many as 660 shots can be fired in a minute. The Armstrong gun also is rapid-firing, but has a larger calibre, some having been made with a six-inch bore, using 41½ lbs. smokeless powder, and throwing a 100 lb. projectile with a force sufficient to penetrate a 15.4 inch plate of wrought iron. A smaller calibre gun of this kind has been made to discharge a 45 lb. projectile as often as 15 times a minute. The Hotchkiss, and the Driggs-Schroeder guns, are very similar in principle, the former being of European, while the latter is exclusively American in origin and development. It is the invention of W. H. Driggs and Lieut. Schroeder of the U. S. navy, and several are being made for both army and navy use. It has the advantage of being lighter and therefore easier to handle than the Hotchkiss gun. is mounted on a pivot so as to be easily swung in any direction, while an arm projecting from the breech enables the operator to aim it much like a musket, at the same time that his hands are free, the one to open and close the breech, and to discharge it, the other to insert and extract the cartridges. It fires still projectiles with great force, and with a rapidity of 36 shots a minute.

MACHIN'ERY, POLITICAL ECONOMY OF: subject of much debate among working people and students of the philosophy of labor. It has never been questioned that machinery has added greatly to the productive power and the possessions of mankind, and has thus tended to place the poor more nearly on a par with the rich, by enabling them to obtain at cheap rate articles of comfort and luxury of so good a quality as not to be capable of improvement by increase of expenditure. lacy has, however, often taken possession of the uninstructed, to the effect that machinery has inherently a tendency to dispense with hand-labor, and so to benefit the consumer at the expense of the workmen (see Lub-DITES). To meet such an objection to the mere use of machinery, it is necessary only to remember, that machinery itself must be made with hands; that the capital of a country will not be diminished by the employment of machinery; and that such capital must continue to be employed in paying wages, as of old. It is true however that there is a shifting of the parties to whom the wages are paid, and it is certainly possible that this shifting may work transient and local inconvenience. When the power-loom was invented, much of the capital that had gone to hand-weaving was spent on iron and wood for construction of power-looms. It is also an inconvenient specialty of machinery that it is apt to train the hands to do but one thing, and that thing is liable

McILVAINE.

to fluctuations. The remedy suggested for this is in the working-man not supposing that he has a right to be employed all his days in one special form of work, but in learning a variety of occupations, or rather learning the faculty possessed by intelligent people of turning the hand to a new function when that is necessary. It is of the more importance to keep this in view, because some kinds of manufacture accumulate in certain districts where they can be best executed, and in these there arises a sort of monoply in that manufacture for the time being, which monoply is liable to be broken

and affected by many accidents. While arguments against all use, or even against extended use, of machinery plainly involve a mischievous fallacy, it is conceivable that there may be an excessive or abnormal use. Utterances of some reputable thinkers in recent years indicate a growing tendency at least to consider this side of the question, and to trace-sometimes with definite statistics—certain social evils to this It is not to be denied that the question is open. However, for any practical result from a decision adverse to the present scale in the use of machinery, three things seem indispensable: 1. To prove that the liability in the present conditions of the case involves evils greater than would result from any extensive change in the amount of use of machinery: 2. To fix the limit beyond which the use is abnormal and injurious: 3. To show a practical method of reduction and readjustment to such new It does not appear that these three requisites are secured, or in process of being secured. Meanwhile, candid argument, fair presentation of facts, and moral appeal based on these, have right and place. See Polit-ICAL ECONOMY.

MCILVAINE, mak-ėl-vān', Charles Pettit, D.D., D.C.L.: 1799, June 18-1873, Mar. 14; b. Burlington, N. J.; son of Joseph McI., U. S. senator from N. J.; of Scotch descent: bp. of the Prot. Episc. Church. He graduated at Princeton College 1816, was ordained deacon by Bp. White 1820, ordained priest 1823, consecrated bp. of Ohio, 1832. He was chaplain to the U.S. Milit. Acad. at West Point and prof. of ethics and history 1825-27, rector of St. Anne's Church, Brooklyn, N. Y. (then on the site of the present terminus of the Brooklyn bridge) 1827-32; prof. in the Univ. of the City of New York 1831; and pres. of Kenyon College, Gambier, O., 1832-40, and afterward of the theol. seminary. Pres. Lincoln sent him to England, with Thurlow Weed and Bp. Hughes (Rom. Cath.) on special service in connection with the capture of Mason and Slidell on the stcamer Trent. Among his published works are Evidences of Christianity; Oxford Divinity Compared with that of the Romish and Anglican Churches (Phil. 1841); 22 Sermons on the Chief Dangers of these Times (1854); The True Temple, or Holy Catholic Church (1854); various charges to his clergy, especially, Preaching Christ Crucified (1863). Memorials of him have been published, by Canon Carus

McINTOSH-MACKAY.

of Winchester, England (Whittaker, New York 1882); by Bp. Bedell, 1873; by Bp. Huntington, 1873; and a series in Standard of the Cross, Cleveland 1882.—Dr. McI. was a scriptural theologian with a tinge of Calvinism, strongly opposed to sacramentarianism (he said 'the sacraments are not to be seen, but seen through'), devoutly evangelical, broad in his Christian fellowship; logical clear, and powerful in thought and style; with saintly fervor and spirituality of mind; a diligent shepherd of his flock; always manly with a gracious dignity; an administrator gifted with singular firmness, vigor, tact, and moral power. He died at Florence, Italy.

McIntosh, mak'in-tosh, John: soldier: 1755–1826, Nov. 12; b. McIntosh co., Ga.; nephew of Lachlan M. He was lieut.col. of Ga. militia in the revolutionary war; defended the Sunbury fort in Liberty co., Ga., against siege by a superior British force; was forced to surrender after gallant resistance in the battle of Brier Creek 1779, Mar. 3; settled in Fla. after the war; was arrested by Spanish troops and imprisoned a year in St. Augustine and Morro Castle, Havana; destroyed the Spanish fort opposite Jacksonville after his release; and was maj.gen. of militia with Jackson at Mobile 1814–5.

McINTOSH. John Baillie: soldier: 1829, June 6—1888, June 29: b. Tampa Bay. Entered U. S. navy as midshipman 1848; resigned 1850; entered the army as 2d lieut. of cav. 1861, June; was promoted 1st. lieut. 1862; appointed col. 3d Penn. vols. 1862, Nov.; promoted capt. U.S.A. 1863; brig.gen. vols. 1864; brevetted maj. U.S.A. for White Oak Swamp, lieut.col. for Gettysburg, col. for Ashland, brig.gen. for Winchester, and maj.gen. vols. for Opequan and the war; appointed lieut.col. 42d U. S. inf. 1866; and retired as brig.gen. 1870.

McINTOSH, Lachlan: soldier: 1725, Mar. 17—1806, Feb. 20; b. near Inverness, Scotland; son of John 'Mor' M. He accompanied his father and Oglethorpe's company of Highlanders to Ga. 1736; became a mercantile clerk, land-surveyor, and civil engineer; col. 1st Ga. regt.; brig.gen. 1776, Sep.: killed Gov. Button Gwinnett in a duel 1777, May; was appointed to a command in the central army under Washington 1778; led an expedition against the Indians on the Penn. and Va. frontier; commanded the Ga. troops in the siege of Savannah and the defense of Charleston, where he became a prisoner of war; member of congress 1784 and commissioner to treat with Southern Indians 1785.

MACKAY, ma-kā', CHARLES, LL.D.: 1814-1889, Dec. 24; b. Perth, Scotland: author. He was educated in London and Brussels; employed on the London Morning Chronicle 1834-43; editor Glasgow Argus 1844-47; contributor to the London Illustrated News many years; founder London Review 1860; and contributor to the Daily News under Charles Dickens's editorship. He lectured in the United States 1857-8; and was war-correspondent of the London Times in the United States during the civil war. He received his degree from Glasgow

McKEAN-McKENDREE.

Univ. 1846. His publications include Songs and Poems (1834); History of London (1837); The Thames and its Tributaries (1840); Memoirs of Extraordinary Popular Delusions (1841); The Salamandrine, or Love and Immortality (1842); Education of the People (1846); Life and Liberty in America (1858); Studies from the Antique (1864); Under the Blue Sky (1871); Lost Beauties of the English Language (1874); The Poetry and Humor of the Scottish Language; and The Founders of the American Republic (1885).

McKEAN, ma-kēn', Thomas, Ll.D.: 1734, Mar. 19—1817, June 24; b. New London, Penn.: signer of the Declaration of Independence. He was admitted to the bar 1754; clerk of the assembly 1757–59; became member of the assembly 1762; delegate to the stamp-act congress 1765; appointed judge common pleas and orphans' courts and sole notary for the lower cos. of Del. 1765; collector of Newcastle 1771; member of congress from Del. 1774–83; pres. of Del. 1777, and congress 1781; chief justice of Penn. 1777–99; gov. of Penn. 1799–1808; and author of the constitution of Penn. 1776. He received the degree LL.D. from the College of N. J. 1781, Dartmouth College 1782, and the Univ. of Penn. 1785.

McKEESPORT, ma-kēz'pōrt: a city in Alleghany co., Penn.; at the junction of the Monongahela and Youghiogheny rivers; on the Baltimore and Ohio railroad; 14 m. s.e. of Pittsburg. It has direct steamboat communication on both rivers; is the centre of a noted coal-mining district; contains 8 churches, graded schools, acad., 1 national bank (cap. \$100,000), 2 state banks (cap. \$127,000), natural gas wells, and daily and weekly news-papers; and has large iron and steel manufactories, marine docks, and locomotive and car works. Pop. (1880) 8,212; (1890) 20,741; (1900) 34,227.

McKELWAY, St. Clair: editor: 1845, Mar. 15—; b. Mo. He received his early education in the N. J. state normal school, and on leaving that began the study of law at Trenton. He completed his legal education in New York, and was admitted to the bar 1866. From early youth he had had a journalistic tendency, and soon after his legal graduation he resumed the newspaper work begun while he was yet a schoolbey. In 1870 he was called to the editorial staff of the Brooklyn Eagle, having been the Washington correspondent for that paper, as well as for some of the New York papers. In 1884, on the death of T. Kinsella, the editor of the Eagle, he was appointed editor in chief.

McKENDREE, mak-kën'drē, William, D.D.: 1757, July 6—1835, Mar. 5; b. King William co., Va.: bp. of the Meth. Episc. Church. He was adjutant and commissary in Washington's army; became a Christian convert 1787, a Meth. minister 1788, presiding elder 1796, supt. of the western conference (O., Ky., Tenn., and parts of Va. and Ill.) 1801, and supt. of Cumberland dist. 1806: and elected bp. 1808. He is venerated as one of the founders of his church in the west.

MACKENZIE.

MACKENZIE, mak-kĕn'zĭ, Sir George: Scottish lawyer and politician: 1636-1691, May 8; b. Dundec; son of Simon M. and nephew of the Earl of Seaforth. studied Greek and philosophy at St. Andrews and Aberdeen, and civil law at Bourges, in France, then-as he himself calls it—'the Athens of Scottish lawyers.' In 1661, he acted as counsel for the Marquis of Argyle, tried by a commission of parliament for high treason. About the same time, he was made a justice-depute, and among his other duties we find him, in 1661, appointed to repair 'once in the week at least to Musselburgh and Dalkeith, and to try and judge such persons as are ther or therabout delated of witchcraft. He was soon after knighted, entered the Scottish parliament 1669 as meniber for Ross-shire, and 1677 was named king's advo-His career to this point had been marked by a patriotic spirit. In the midst of his professional labors, he was an eager student in literature. In 1663 appeared his Religio Stoici, or a Short Discourse upon several Divine and Moral Subjects; 1665, his Moral Essay upon Solitude; 1667, his Moral Gallantry. He also composed some poetry. He was among the first Scotchmen who wrote the English language purely. Dryden, in his Discourse on the Origin and Progress of Satire, alludes to him as 'that noble wit of Scotland.' Unhappily, in the popular mind he is better known as criminal prosecutor in the memorable days of the Covenant, in which capacity as seemingly willing instrument of despotism, he earned for himself the name of the 'bluidy Mackenzie.' He wrote a defense, entitled A Vindication of the Government of Charles II. In 1678 appeared his Discourse on the Laws and Customs of Scotland in Matters Criminal; in 1684, his Institutions of the Laws of Scotland; and shortly afterward, he took the leading part in founding the Advocates' Library. He was permitted to retire to Oxford, and died in London.

MACKEN'ZIE, GEORGE HENRY: born 1837, Mar. 24, Bellefield, Scotland. At the age of 19 he entered the British army, but sold his commission 1861; came to America 1863, and enlisted in the Federal army, reaching the rank of capt. before the close of the war, After the war he became a professional chess-player. having always been proficient at the game—having won first prize at the international chess-contest in London 1862. In 1865–68 he won first prizes at the annual contests of the New York Chess club. He played in all the great tournaments on both sides of the Atlantic; in 1878 winning first prize at Paris; in 1887 at Frankfort-on-the-Main winning 15 out of 20 games against nearly every noted player in the world, except Steinitz. M. ranks, among the most eminent chess-players of the world.

MACKEN'ZIE, HENRY: British novelist: 1745, Aug.—1831, Jan. 14; b. Edinburgh. He received his education at the university of his native city, and practiced as an advocate there. In 1804, he was appointed comptroller of taxes for Scotland. His Man of Feeling (1771) Man of

MACKENZIE.

the World (1783), and Julia de Roubigné, won him a place among the authors of his time. There is in these works something of the minuteness of Richardson, with a peculiar soft and sentimental tone, partly derived from Sterne, but without evidence of genius. In 1778, M. began to edit a periodical called the Mirror (modelled after the Spectator), which lasted 17 months, and was followed by the Lounger 1785, which lasted two years. His contributions to these show more manliness of style than his fictions, and considerable wit and humor. He had the credit of being the first to direct public attention, by an article in the Lounger, to the merits of the poems of Burns.











